



**SDMS Doc ID 2027962**

**MEREDITH & ASSOCIATES, INC.**

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**SCIENTIFIC and REGULATORY CONSULTANTS**

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December 22, 2003

Mr. Craig Benson, Federal On-Scene Coordinator  
Superfund Division, SFD-9-2  
EPA, Region 9  
200 Oceangate, Suite 900  
Long Beach, CA 90802

Re: Response to Comments to the Soil Sampling Plan  
Dico Oil Company, Inc.  
1845 East Willow Street  
Signal Hill, California,  
EPA UAO 9-2003-14  
M&A Job No. 2003-123

Dear Mr. Benson:

In response to the Unilateral Administrative Order for the Performance of a Removal Action (Order) issued to Dico Oil (Dico), Meredith & Associates (M&A) prepared a Soil Sampling Plan (SSP), dated December 10, 2003. EPA reviewed the SSP and provided comments. The EPA comments are listed in italics below along with M&A responses to each of the comments.

**EPA Comment.** *The documents described by the final two bullets in this section should be identified as documents that were terminated and not implemented.*

The documents listed in Section 1.8 of the SSP stated that the previous consultant to Dico, the Reynolds Group, prepared Supplement #1, dated November 12, 2003 and Supplement #1, dated November 14, 2003. These documents were terminated and were not implemented.

**EPA Comment.** *Only residual solid bulk wastes from the ASTs were contained within twenty 55-gallon drums and one roll-off bin.*

M&A concurs that only residual solid bulk wastes from the ASTs were contained within the twenty 55-gallon drums and one roll-off bin.

**EPA Comment.** *A key project objective includes the cleanup and disposal of PCB remediation waste in conformance with the self-implementing cleanup provisions described at 40 CFR 761.61(a). These provisions are considered "applicable or relevant and appropriate requirements" (ARAR) as provided at 40 CFR 300.415(j).*

M&A concurs with the above statement.

**EPA Comment.** *It should be clearly stated that this plan only addresses site characterization as specified at 40 CFR 761.61(a)(2), 40 CFR 761.260, and 40 CFR 761.265(a). Sampling to verify completion of self-implementing cleanup as required at 40 CFR 761 Subpart O will be addressed in a separate plan document.*

A separate document will be prepared to describe the removal action and sampling methodology to verify completion of the self-implementing cleanup, as described in 40 CFR 760 Subpart O.

**EPA Comment Pertaining to Section 3.2 Cleanup Goals.** *The EPA Region 9 Preliminary Remediation Goals (PRGs) for industrial soil (750 mg/kg lead and 450 mg/kg chromium) will be considered only to the extent they are not inconsistent with hazardous waste determinations imposed by the State of California requirement for Soluble Threshold Limit Concentration (STLC) analysis for samples exceeding certain Total Threshold Limit Concentration (TTLC) threshold values.*

M&A concurs with the above statement.

**EPA Comment Pertaining to Section 3.4.1 Concrete Sampling Rationale and 3.4.2 Soil Sampling Rationale.**

1. *40 CFR 761 Subparts N and O are specific as to the selection of sample locations and criteria for minimum number of samples. Samples representing the concrete approach (B-1 to B-3), the truck loading/unloading area (B-4 to B-6), and the eastern edge of the site (B-81 to B-83) are in a different category from those proposed for the former tank farm (B-7 to B-56) and the former drum storage area (B-57 to B-80).*

*The tank farm and drum storage location samples consider the required square grid and grid size and are defined "cleanup sites" within this remediation waste location. The other "areas" are being investigated in a preliminary manner to ascertain whether they may be required to undergo the more comprehensive sampling design. This is approved, so long as the text clearly separates these two objectives.*

M&A agrees that there are two objectives for the "cleanup sites" and the surrounding area. The tank farm and drum storage locations are defined as "cleanup sites" and the other areas are being investigated in a preliminary manner to ascertain whether they may be required to undergo the more comprehensive sampling design.

2. *40 CFR 761.286 requires a maximum depth of 7.5 cms. Please change your first depth increment from 0.5 foot to 3 inches to account for this requirement. This requirement may be altered due to field conditions which should be specified (i.e., obvious fill, vegetation, etc). The 2.5 and 5.0 foot increments (as specified) are appropriate for the non-PCB Rule objectives of this effort (waste determination).*

M&A will collect soil samples at depths of 3 inches, 2 to 2.5 feet and from 4.5 to 5.0 feet.

3. *This Soil Sampling Plan is designed around very specific regulatory requirements of the PCB Rule. Section 3.4.2, in particular, requires specific references to the PCB Rule to serve as "crosswalks" between the requirements and the chosen methods. Specifically:*

*- In addition to the information in Table 2, describe the proposed compositing technique against the requirements of 40 CFR 761.289. Provide a diagram of the composite areas.*

The soil samples collected for compositing will be composited in the laboratory by laboratory personnel. The laboratory will take an equal amount by weight from each of the designated sample containers and thoroughly mix the soil in a Pyrex (or other type of non-metallic) beaker. The mixing container and spatula used to collect the soil sample will be cleaned with the standard laboratory soap and rinsed with deionized water. The remaining soil in the designated sample containers, which is not used in the composite sample, will be retained at the laboratory for future use if necessary.

Based on a discussion with Eric Nelson of E&E, the diagram represented in Figure 3 of the SSP was adequate and an additional figure was not necessary at this time.

*- Change the existing reference 40 CFR 761.283 to 40 CFR 761.265*

The sentence should read "In accordance with 40 CFR 761.265 samples will be collected within the former tank farm area and drum storage area using a grid interval of 3-meters (10-feet).

*- Discuss how the "area of inference" introduced at 40 CFR 761.283(d) will be integrated into the design.*

The area of inference will be defined by the composited squares. For example, the analytical results for the "Comp-1", representing the 3-inch soil depth, will be applied to all nine squares that were included in the composite sample. If the "Comp-1" soil sample contains a PCB concentration which exceeds the cleanup criteria, all nine squares will be marked for excavation, and the grid will be extended in the appropriate directions, as necessary. If the "Comp-2" or "Comp-3" soil samples (representing the 2.5 and 5-foot depths at the same location as the 3-inch soil sample) contain PCB concentrations above the cleanup criteria, M&A may analyze the individual samples (used in making up the composite sample) as discrete samples for localized characterization. This same rationale will be applied to all soil samples collected during the site characterization phase.

*- Provide for matrix spike/matrix spike duplicate samples in addition to duplicate composite samples.*

M&A will provide a matrix spike/matrix spike duplicate sample in addition to a duplicate composite sample.

EPA Comment Pertaining to Section 3.9 Quality Assurance /Quality Control (QAPP). *Please consider the comments listed in my Dico Oil - Comments to Supplement #6.*

With reference to Appendix A: 6.1 QUALITY CONTROL PROCEDURES (Comments to Supplement #6)

*With the exception of field duplicate samples, information associated with the "collection and laboratory analysis of appropriate field equipment and trip blanks to monitor for contamination of samples in the field or in the laboratory, and collection and laboratory analysis of matrix spike, matrix spike duplicates to evaluate precision and accuracy" is not carried forward in Supplement #6, Section 5.0. Indicate (in Supplement #6) the limits of the field QA/QC program as compared against the broader program contained in the Appended QAPP.*

Equipment blanks will be necessary only if hand augering equipment is used to collect a sample. Most, if not all, of the samples will be collected using expendable sample equipment, which will not require equipment blanks.

Soil matrix trip blanks will not be necessary for this project based on the data quality objectives of a soil removal action.

Sincerely,

Keith G. Farrell CEG # 1314  
Senior Project Manager

cc: Lynn Edlund M&A  
Roger McCracken, M&A  
MA-2003-123 File

**APPENDIX B**

**M&A STANDARD OPERATING PROCEDURES –  
SAMPLE HANDLING AND PRESERVATION**

**M/B&A STANDARD OPERATING PROCEDURES**  
**SAMPLE HANDLING AND PRESERVATION**

Revision 4  
1 December 2003

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## ATTACHMENTS

### TABLE 1 – SUMMARY OF ANALYSES

### CHAIN OF CUSTODY RECORD



## **1.0 INTRODUCTION**

This standard operating procedure (SOP) provides guidance for the handling and preservation of environmental samples, including requirements for sample identification, chain of custody (COC), sample preservation, storage, and transportation. The overall objective of this SOP is to define sample management activities and protocols from the time of sample collection to the time the samples are received by the laboratory. Specific methods and procedures for the collection of groundwater and soil samples are discussed in their respective sampling SOPs. Proper sample handling and preservation techniques play a vital role in the generation of valid, defensible analytical data and in the attainment of project data quality objectives (DQOs). The data must be adequate to support project decisions and allow activities to proceed.

## 2.0 DEFINITIONS

### Chain-of-Custody

Procedures and records that document the physical possession of a sample from the time the sample is collected to the time the sample is received by the laboratory. A chain-of-custody record documents the date and time of sample collection, the intended analyses, and the identification of all persons who relinquish or receive the sample.

### Custody Seal

A brittle, non-removable tape that is placed across the lid of sample containers or coolers; an intact seal provides assurance that the samples have not been tampered with during sample transport to the laboratory.

### Holding Time

The time allowed between sample collection and sample analysis, assuming that the required preservation and storage techniques are employed.

### Matrix

The environmental medium that is being sampled (i.e., groundwater, surface water, soil, sediment, waste, etc.).

### Quality Assurance and Quality Control Samples

Samples analyzed for the purpose of assessing the quality of the sampling effort and of the analytical data. QA and QC samples include, but are not limited to field duplicate samples, rinsate blanks, field blanks, trip blanks, and QA split samples.

### Sample

Physical evidence collected for environmental measuring and monitoring. For the purpose of this SOP, the procedures and protocols apply to solid (i.e., soil and bedrock) and aqueous (i.e., groundwater) samples.

## 3.0 PROCEDURES

### 3.1 APPLICABILITY

These procedures apply to work performed by Meredith & Associates (M&A) personnel, or work performed by subcontractors under the direction of M&A. The information of this SOP may be incorporated into project workplans and reports.

### 3.2 SAMPLE MANAGEMENT

#### 3.2.1 Sample Containers

The selection of a sample container of appropriate volume and construction depends on the sample matrix and analyses to be performed. Unless specified otherwise by the project plan, sample containers should conform to the specifications prescribed in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846* (USEPA, on-line CD ROM). A copy of these specifications is attached. Samples that are designated for volatile or semi-volatile organic compound analysis, the sample containers should be filled completely to ensure that no headspace is present. This applies to soil samples as well as water samples.

Once a sample container has been opened, it should be used as soon as possible. If the container was received unsealed from the laboratory or container vendor, or if the container was not used shortly after opening, it should be discarded or recycled. When storing sample containers prior to sampling, care should be taken to keep the containers away from chemicals or volatile products, such as fuels, degreasing agents, paint, etc., that could compromise the analytical results. Sample containers containing preservatives added by the laboratory should not be used if stored for an extended period or exposed to extreme heat. Sampling personnel should exercise care when handling containers with preservatives, so as to avoid contact or spillage. Loosely capped containers containing preservatives should not be used.

For the purpose of this SOP, a metal or plastic soil sample sleeve (typically employed with solid- or split-barrel samples) shall be regarded as a "sample container." Unless certified clean from the container vendor, sample sleeves may contain oily residues from their manufacture; accordingly, sleeves should be washed thoroughly and rinsed prior to use. Immediately following sample collection, the ends of the sample sleeve should be

covered with a Teflon sheet (or aluminum foil) and plastic end caps to prevent volatile organic compound loss. The use of adhesive tape, such as duct tape, should be avoided. Tape adhesives may contain organic compounds, such as toluene, which conceivably could lead to erroneous detections (i.e., false "hits"). Immediately following sample collection, samples for volatile organic compound analysis should be subsampled following USEPA Method 5035.

### 3.2.2 Sample Labeling

A durable, adhesive sample label should be affixed to all sample containers. In many instances, the laboratory or container vendor supplies sample labels. The following information should be recorded on the label with waterproof ink:

- Client name, project title, and/or project location (sufficiently specific for data management)
- Unique sample identification number (typically including boring or well ID, and depth, where applicable)
- Date and time of sample collection
- Sample matrix
- Initials of sampler
- Preservative(s) used
- Analysis(es) to be performed

If a split sample is collected by a third party (such as a regulator, another consultant, etc.), M&A sampling personnel should ensure that identical labels are attached to each sample container. After labeling the container, each sample should be refrigerated or placed in a cooler containing cubed or block ice to maintain a target temperature of 4 degrees Celsius (°C). Reusable ice packets (e.g., blue ice) should not be used. Ice replenishment may be necessary if samples are held overnight prior to submittal to the laboratory, or if sampling is conducted in high-temperature field conditions. Samples also should be packed in resealable plastic bags to safeguard against container damage.

Custody Seals: Depending on project-specific or regulatory requirements, custody seals can be used on individual sample containers and/or shipping containers to preserve the chain-of-custody. A custody seal

typically consists of security tape that is labeled with the sampling date and initials of the sampler. At the minimum, custody seals should be placed on the front of the cooler and on one of the rear cooler hinges.

### 3.2.3 Chain-of-Custody

Chain-of-custody (COC) procedures require a written record of the possession of each sample from the time it is collected to the time it is received by the laboratory or final destination. A sample is considered to be “in custody” if it is:

- In a person's possession.
- In view after being in physical possession.
- In a secured condition after having been in physical custody.
- In a designated secure area, restricted to authorized personnel.

The COC record is completed in the field to document the samples that were collected and the analyses that were requested. The information provided on the COC record should include the following:

- Client name
- Project name
- Project location
- Sampling location
- Signature of sampler(s)
- Sample identification number
- Date and time of collection
- Sample type (i.e., grab or composite)
- Sample matrix
- Signature of individuals involved in custody transfer (including date and time of transfer)
- Number and type of containers collected for each analysis

- Types of analyses requested
- Remarks regarding individual samples, as appropriate.

COC records will be placed in a plastic bag and transported with the samples. When the sample(s) are transferred, both the receiving and relinquishing individuals sign the record. Where a commercial, overnight carrier service is used to ship the samples (i.e., Federal Express), signed air bills will serve as evidence of custody transfer between the field sampler and commercial carrier as well as carrier and laboratory. The sampler retains copies of the COC record and/or air bill.

#### 3.2.4 Sample Preservation and Storage

Sample preservation requirements depend on the analytical method and the sample matrix. Unless otherwise specified, sample preservation procedures are to follow the specifications prescribed in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846* (USEPA, on-line CD ROM). A copy of these specifications is attached.

#### 3.2.5 Sample Delivery

Procedures for packaging and transporting samples to the laboratory depend on the nature of the samples, including estimated contaminant concentrations, and the intended analyses. Samples are classified as environmental, high concentration, geotechnical, or other samples. "Environmental samples" (USEPA, on-line CD ROM) are defined as soil or water samples that are not saturated or mixed with a pure product (i.e., refined fuels, free-phase solvents, etc.). Samples that are saturated in product are defined as "high concentration samples;" they require special handling and transportation procedures as discussed in Section 3.2.6.3. Similarly, the transport of other non-environmental, hazardous samples may require careful evaluation of and adherence to U.S. Department of Transportation (DOT) regulations.

Sample transportation usually involves hand-delivery of the samples to the laboratory by M&A personnel or by courier. Sampling at remote job sites can require transportation by a commercial overnight carrier service. Sample handling and shipping requirements for both delivery methods are discussed in the following sections.

### 3.2.5.1 Environmental Samples

Recommended "environmental sample" handling and transportation procedures are outlined as follows:

- Each sample will be placed in a separate plastic or "bubble-wrap" bag. As much air as possible is squeezed from the bag before sealing. Bags may be sealed with evidence tape for additional security, if necessary. "Bubble-wrap" bags are effective in protecting glass sample containers against breakage during transportation.
- An ice chest (sturdy construction) is typically used as the shipping container. In preparation for shipping or hand-delivery of the samples, the cooler drain plug is taped shut from the outside. If the samples are to be shipped via a commercial carrier, packing material, such as vermiculite or "bubble-wrap," should be used to prevent damage or breakage of the sample containers. Separators, such as cardboard or foam, may be placed between sample containers at the discretion of the sampling personnel.
- Water samples for chemical analysis should be cooled to 4°C with conventional ice. Ice should be contained in double, resealable plastic bags such that water will not fill the cooler as the ice melts. Dry ice should not be used, as it tends to freeze aqueous samples.
- As previously described, the COC record will be placed inside a resealable plastic bag. If the cooler is shipped via a commercial carrier, the bagged COC record should be taped to the inside of the cooler lid, and the cooler lid should be taped shut with strapping tape (filament type). Tape usually is not necessary if the cooler is delivered by hand or courier to the laboratory.

### 3.2.5.2 Geotechnical Samples.

Geotechnical soil samples (or soil samples intended for physical testing) typically are collected with a Shelby tube or with a split-barrel sampler equipped with sample liners. Although formal holding times do not apply to geotechnical analyses and tests, the samples should be submitted for testing as soon as possible, and in some cases, preserved by chilling. Undisturbed samples should be sealed in resealable plastic bags to maintain sample moisture. COC records are necessary to generate defensible data; they should reflect information concerning suspected contamination in the samples, including headspace screening data, and the name of any suspected contaminants and the approximate range of concentrations, if known.

### 3.2.5.3 Other Samples

Samples other than environmental samples must be shipped according to the requirements of 49 CFR 173.24 as well as applicable State and local regulations. Prior to the collection and shipment of these samples, relevant shipping requirements shall be researched and a written description of shipment procedures should be prepared. The shipping procedures should be reviewed and approved by M&A's Director of Health and Safety and by the commercial carrier, if used. Examples of "other" samples include potential asbestos-containing material (ACM), transformer fluids, and explosive gases, and the description reviewed and approved by a M&A certified industrial hygienist prior to samples.

### 3.2.5.4 Prohibited Samples

M&A prohibits the collection of the following types of samples without advance permission from an officer of the company:

- Radioactive substances
- Biological hazards
- Chemical warfare agents
- Drugs (controlled substances)
- Explosive ordnance
- Explosives (as per DOT)
- Shock-sensitive materials

### 3.2.6 Holding Times

The allowable holding time for sample extraction and analysis depends on the sample matrix and the analytical method. Unless otherwise specified, sample holding times are to conform with the specifications in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846* (USEPA, on-line CD ROM). A copy of these specifications is attached. In coordinating sample shipment or delivery to the laboratory, the sampler must take into account the vagaries of sample shipment (i.e., unanticipated delays on the part of commercial carriers or by local courier services), and/or sample receipt and temporary storage at the laboratory.



Wherever possible, the sampler should err on the side of caution, and submit the samples to the laboratory as soon as practicable.

#### 4.0 REFERENCES

Department of Toxic Substances Control (DTSC). 1995a. *Responsible Sampling of Ground Water for Hazardous Substances*. California Environmental Protection Agency, July 1995. 34 pp.

DTSC. 1995b. *Drilling, Coring, Sampling, and Logging at Hazardous Waste Release Sites*. California Environmental Protection Agency, July 1995.

US Army Corps of Engineers (USACE). 1990. *Chemical Data Quality Management for Hazardous Waste Remedial Activities*, Regulation ER 1110-I-263, 1 October 1990.

US Environmental Protection Agency (USEPA). *Test Methods for Evaluating Solid Waste SW-846*, Office of Solid Waste and Emergency Response. On-line CD ROM.

**TABLE 1**  
**SUMMARY OF ANALYSES**

<b>SOIL ANALYSES</b>				
<b>Analyte</b>	<b>Method</b>	<b>Container</b>	<b>Preservative</b>	<b>Holding Time</b>
Semi-Volatile Organic Compounds	USEPA 8270C	4 oz glass or metal sleeve	Temperature: Cool, 4 °C	14 days to extraction, 40 days to analysis
CAM Metals (see Table 2)	USEPA 6010/7000	4 oz glass or metal sleeve	Temperature: Cool, 4 °C	180 days mercury: 30 days
Organochlorine Pesticides	USEPA 8081A	Metal sleeve, Teflon sheet	Temperature: Cool, 4 °C	14 days to extraction, 40 days to analysis
Polychlorinated Biphenyls	USEPA 8082	4 oz. glass or metal sleeve	Temperature: Cool, 4 °C	14 days to extraction, 40 days to analysis
Hexavalent Chromium (Cr <sup>+6</sup> )	USEPA 7199	4 oz glass or metal sleeve	Temperature: Cool, 4 °C	30 days to digestion, 168 hours to analysis
Volatile Organic Compounds	USEPA 8260B/5035	metal sleeves; subsamples to glass VOAs	sodium bisulfate; methanol; freeze -10 °C	sodium bisulfate: 48 hours methanol: 14 days frozen samples: 7 days
TPH (heavy hydrocarbon)	USEPA 8015M	4 oz. glass or metal sleeve	Temperature: Cool, 4 °C	14 days to extraction, 40 days to analysis
TPH (diesel)	USEPA 8015M	4 oz glass or metal sleeve	Temperature: Cool, 4 °C	14 days to extraction, 40 days to analysis
TPH (extended)	USEPA 8015M	4 oz glass or metal sleeve	Temperature: Cool, 4 °C	14 days to extraction, 40 days to analysis
Dioxins/Furans	USEPA Method 8290	4 oz glass or metal sleeve	Temperature: Cool, 4 °C	14 days to extraction, 40 days to analysis
pH	USEPA Method 9045C	4 oz glass or metal sleeve	Temperature: Cool, 4 °C	Immediate (same day)
Polynuclear aromatic hydrocarbons	USEPA Method 8310	4 oz glass or metal sleeve	Temperature: Cool, 4 °C	14 days to extraction, 40 days to analysis
TPH (gasoline)	USEPA 8015M/5035	metal sleeves; subsamples to glass VOAs	sodium bisulfate; methanol; freeze -10 °C	sodium bisulfate: 48 hours methanol: 14 days frozen samples: 7 days

Sheep Creek

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SAMPLING INFORMATION:

[illegible][illegible]

**APPENDIX B**  
**SITE SAFETY PLAN**

**M&A Project No. MA-2003-123**

**HEALTH AND SAFETY PLAN**

Dico Waste Oil Site  
Signal Hill, California

**Prepared by:**

MEREDITH & ASSOCIATES, INC.  
9841 Airport Boulevard, Suite 1010  
Los Angeles, California 90045

November 17, 2003

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## LIST OF ACRONYMS

°C	degrees Celsius
°F	degrees Fahrenheit
ACP	access control point
ACGIH	American Conference of Governmental Industrial Hygienists
BHH	Biological Health Hazard
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAL/OSHA	California Department of Occupational Safety and Health
CCR	California Code of Regulations
CHSO	Corporate Health and Safety Officer
COC	chemicals of concern
CP	command post
CRZ	contaminant reduction zone
dBA	decibels
ESA	Environmental Site Assessment
EZ	exclusion zone
FID	flame ionization detector
HSM	Health and Safety Manual
HASP	Health and Safety Plan
IDLH	immediately dangerous to life or health
IIPP	Illness and Injury Prevention Program
IPA	isopropyl alcohol
LEL	lower explosion limit
LOP	level of protection
m	meter
MEK	methyl ethyl ketone
MIBK	methyl isobutyl ketone
MTBE	methyl tertiary-butyl ether
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PFS	Project Field Supervisor
PHSO	Project Health and Safety Officer
PM	Project Manager
PPE	personal protective equipment
PVC	polyvinyl chloride

**LIST OF ACRONYMS**  
(concluded)

SCBA	self-contained breathing apparatus
SHSO	Site Health and Safety Officer
STEL	short term exposure limit
SZ	support zone
TWA	time weighted average
UEL	upper explosive limit
USEPA	United States Environmental Protection Agency
VOCs	volatile organic compounds

## 1.0 INTRODUCTION

This Health and Safety Plan (HASP) was prepared by Meredith & Associates (M&A) to be used when conducting field investigations at the Dico Oil Company Property (hereinafter the Site). The property owner has entered into an agreement with the United States Environmental Protection Agency (USEPA) to mitigate the threats to human health and the environment posed by contaminated soils and structures at the Site.

## 2.0 BACKGROUND

The Site address is 1845 East Willow Street and is located south of the corner of East 27<sup>th</sup> Street and North Rose Avenue in Signal Hill, California (see Figure 1). The purpose of this document is to ensure the safety and compliance of M&A personnel and subcontractors during the completion of activities at the Site.

### 2.1 SITE DESCRIPTION

The Site is located in City of Signal Hill, (Figure 1). The Site is approximately 19,000 square feet in size and is generally bounded by East 27<sup>th</sup> Street to the north, residential and commercial properties to the east, East Willow Street to the south and commercial/industrial properties to the west. The Site currently consists of a tank farm, a truck pad, a laboratory, and tool sheds. Historically, the Site was an oil and recycling facility, operations ceased in the mid 1990's.

### 2.2 CLIMATE

Moderate temperatures with comfortable humidities and limited precipitation characterize the climate in the South Bay area. Temperatures are normally mild, with rare extremes above 100°F or below freezing. Mean annual precipitation is approximately 14.8 inches, of which approximately 12.2 inches occur between November and March. Temperatures are expected to range between 60°F and 75°F during field activities.

## 3.0 PROJECT SAFETY PERSONNEL

This HASP has been prepared by M&A. M&A is responsible for ensuring compliance of M&A personnel, subcontractor personnel, and visitors to the site invited by M&A, with the HASP and its provisions. The Corporate Health and Safety Officer, Project Manager, Project Health and Safety Officer, and Site Health and Safety Officer are responsible for the distribution of this HASP and for the compliance audit.

### 3.1 CORPORATE HEALTH AND SAFETY OFFICER (CHSO): John R. Anderson

The CHSO is responsible for the following:

- Establishing all corporate health and safety procedures
- Distributing this corporate HASP and enforcing the provisions outlined herein
- Ensuring that the company is in compliance with all Federal, State, and local guidelines regarding health and safety issues
- Confirming that all employees have appropriate health and safety training and have taken a current respirator fit test as outlined in M&A's Respiratory Protection Program
- Verifying that all employees are current in M&A's Medical Surveillance Program (see Appendix A)

- Maintaining records regarding employee safety training, respirator fit testing, and medical screening
- Reporting all accidents to the necessary authorities.

With regard to individual projects, the CHSO has the same authority as the Project Health and Safety Officer and Site Health and Safety Officer.

### 3.2 PROJECT MANAGER (PM): Lynn J. Edlund

The PM is responsible for the overall performance and compliance with applicable regulations and procedural guidelines as specified in this HASP. The PM also is responsible for implementing the provisions of this plan. Implementation includes review of field personnel compliance with M&A's medical examination requirements, training of field personnel involved with the project, provision of appropriate safety equipment, and submittal of the required health and safety documents to the Project Health and Safety Officer. In the event that the PM becomes aware of a deficiency in the implementation of the HASP, he/she will take appropriate action by consulting with the Project Health and Safety Officer and provide all affected personnel with appropriate written documentation. The authority of the PM is the same as the Project Health and Safety Officer.

### 3.3 PROJECT HEALTH AND SAFETY OFFICER (PHSO): Keith G. Farrell

The PHSO will make daily assessments of health and safety practices at the site. The PHSO will observe operating personnel and authorized visitors for indications of impaired health due to contaminant exposure, heat stress, or other hazards.

The PHSO will evaluate whether site conditions present hazards not previously predicted or expected, will inspect personal protective equipment and verify its use. The PHSO also is responsible for assisting the PM with on-site implementation of this HASP, including maintaining safety equipment supplies, performing air monitoring of the breathing zones of workers (if deemed necessary), and setting up work zone markers and signs.

The PHSO will ensure that daily safety meetings involving all persons permitted to enter the contaminated area (Exclusion Zone) are conducted. The PHSO will have the authority to suspend work or modify work practices for safety reasons and to dismiss individuals whose conduct on site endangers the health and/or safety of others.

### 3.4 PROJECT FIELD SUPERVISOR (PFS): Roger D. McCracken

The PFS is responsible for coordinating and supervising technical field activities at the site. This individual will be on site at all times during the field operations and will document all work progress and be responsible for execution of the PEA Workplan and HASP. This individual is responsible for controlling access to the site, has the authority to prohibit individuals from continuing on-site work due to safety infractions, and can implement use of upgraded personal protective equipment using his judgment. This individual also will maintain a record of all logs and a copy of the HASP at the site.

### 3.5 SITE HEALTH AND SAFETY OFFICER (SHSO): Roger D. McCracken

The SHSO is responsible for assisting the PM and PHSO with on-site implementation of this HASP. Responsibilities include:

- Maintaining safety equipment and supplies
- Performing air quality measurements as required or needed
- Directing decontamination operations and emergency response operations

- Setting up work zone markers and signs if such zones are specified in the HASP
- Reporting all accidents, incidents, and infractions of safety rules and requirements to the PM, PHSO, and CHSO.

The SHSO has the authority to inspect work at any time. If he determines that the provisions of the HASP are inadequate to provide a working environment conducive to worker safety, then he/she is to inform the PM of individuals whose on-site presence jeopardizes their health and safety or the health and safety of others.

#### 4.0 SCOPE OF WORK

This HASP covers all fieldwork and field activities associated with the Site. The activities are expected to include, but are not limited to, soil sampling, and oversight of laboratory subcontractors. Additional background information may be provided in an accompanying document, such as a proposal or report. The sampling and analytical program is described in detail in the accompanying sampling plans prepared for this Site. Sampling activities will be conducted under the supervision of a California State Registered Geologist (RG) or a California State Professional Engineer (PE).

#### 5.0 SITE HAZARD ANALYSIS

The field investigation at the site may result in exposure to biological, chemical, and physical hazards. Preparation of this HASP was based on review of historical documents.

##### 5.1 CHEMICAL HEALTH HAZARDS

The chemicals of concern (COC) may form toxicological exposure hazards and enter the body via inhalation, ingestion, skin absorption, and/or injection. The permissible exposure limit (PEL) is defined by the California Department of Occupational Safety and Health (CAL/OSHA) in the California Code of Regulations (CCR), Title 26, Section 5155, and other sections, where necessary. PELs refer to the airborne concentrations of substances and represent conditions during which it is believed that nearly all workers may be repeatedly exposed, eight hours per day, for a 40-year working lifetime, without adverse effect. Variations in individual susceptibility may result in a small number of workers experiencing discomfort to some or all the chemicals at concentrations equal to or below the PEL. A smaller percentage of individuals may be affected more seriously from exposures at or below the PEL due to aggravation of a pre-existing condition or by development of an occupational illness. The PEL is based on research conducted by the National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) and are based on the best available information from industrial experience, animal studies, and other sources.

The time-weighted average (TWA) PEL represents a time-weighted exposure for an 8-hour work day, 40 hours per week. Most PELs are expressed as time-weighted averages. CAL/OSHA also has promulgated short-term exposure limits (STEL; usually 15 or 30 minutes) for certain substances. A few substances have a ceiling concentration (the highest allowable concentration in the workplace) that can not be exceeded, even instantaneously.

A site assessment conducted for the Site has identified current and historical businesses that used or may have chemicals of concern. The potential COCs are total petroleum hydrocarbons, polychlorinated biphenyls (PCBs), and metals (i.e., chromium and lead). Applicable exposure limits for selected chemicals are summarized in the following sections and Table 1.

### 5.1.1 Total Petroleum Hydrocarbons

Analytes	Exposure Limits		Prop. 65	
	8-hr TWA	STEL	Cancer	Reproductive Toxin
Gasoline	300 ppm	500 ppm	Yes	No

Total petroleum hydrocarbons are a large chemical grouping that includes compounds such as gases, fuels, oils, greases, waxes, and tars. Most petroleum hydrocarbons present some fire risk, are variably toxic by ingestion and inhalation and cause local skin irritation.

#### Gasoline

Gasoline is an eye and throat irritant at levels around the PEL, and causes narcotic effects (with symptoms including headache, nausea, dizziness, and blurred vision) at higher levels. Long term exposure can effect liver and kidney function. Some studies indicate a potential for gasoline to be an animal carcinogen, but this has not been fully established. Because gasoline is a mixture of varying proportions of dozens of hydrocarbons, a mean odor threshold has not been determined.

#### Fuel Oil (Diesel)

Exposure to diesel fuel may cause nausea, eye irritation, increased blood pressure, headache, lightheadedness, loss of appetite, poor coordination, and difficulty concentrating. Breathing diesel fuel vapors for extended periods may cause kidney damage and lower the blood's ability to clot.

### 5.1.2 Polychlorinated Biphenyls

Analytes	Exposure Limits		Prop. 65	
	8-hr TWA	STEL	Cancer	Reproductive Toxin
Polychlorinated Biphenyls	0.5 mg/m <sup>3</sup>	NA	Yes	Yes

Polychlorinated biphenyl also referred to as PCB, Aroclor 1242 (42% chlorine), or Aroclor 1254 (54% chlorine) is a colorless to pale yellow, non-combustible viscous liquid. PCBs have a boiling point ranging from 617°F to 734°F and a vapor pressure of 0.001 mm Hg. Under conditions where exposure may occur, inhalation or ingestion may cause dry, sore throat, eye discharge, acneform eruptions, follicular accentuation, dark brown pigmentation of nails and skin, sweating palms, feeling of weakness, and headache. PCBs, reported to be a carcinogen, may damage the skin, eyes, liver, and reproductive system.

### 5.1.3 Metals

Compound	Exposure Limit		Prop 65	
	8-hr TWA	STEL	Cancer	Reproductive Toxin
Chromium	0.5 mg/m <sup>3</sup>	NA	No	No
Lead	0.05 mg/m <sup>3</sup>	NA	Yes	Yes

These COCs have been used as pigments, and as fungicides. Lead was used in gasoline as an octane booster. Exposure may result in weakness, insomnia, facial pallor, malnutrition, anemia, loss of hair and nails, colic, abdominal pain, and hyper-tension.

#### 5.1.4 Required Safety Measures for Chemical Health Hazards

Should exposure to any of the above compounds occur, the following should be accomplished:

Affected Body Part	Response
Eye	Irrigate immediately
Skin	Wash promptly with soap
Breath	Move to fresh air
Swallow	Seek medical attention immediately

If breathing has stopped, mouth-to-mouth resuscitation should be provided and medical attention sought (refer to page 31 for emergency contact information).

#### 5.2 BIOLOGICAL HAZARDS

Potential biological hazards may include plants, ticks, snakes, various stinging insects, and biological health hazards (BHH). Some of the most common biological hazards can be prevented or the effects reduced by over-the-counter medications. These medications, as recommended by local pharmacists, will be kept in supply in the first aid kit. The best protections against biological hazards are to wear appropriate clothing and avoid exposure to the hazard. Workers who know they are sensitized to any biological hazard should not perform any task that would increase their risk for anaphylactic shock. Additionally, the site safety officer should be informed of any sensitizations to biological hazards.

#### 5.3 PHYSICAL HAZARDS

Listed below are the type of physical hazards that may be present during activities at the site:

- Slip, Trip, or Fall - These types of hazards result from unlevelled surfaces, slippery surfaces, and hard-to-see objects located across walking paths (e.g., rope, cords, etc.), and are responsible for over 60% of work-related injuries.
- Housekeeping and Sanitation - In order to permit safe and efficient work conditions, all work areas will be kept clean and free from debris. All hand tools will be kept in storage until they are needed for use. Trash containers will be leak proof, clean, and maintained in a sanitary condition. If vermin are encountered, an approved extermination method will be initiated. Potable water will be used for first aid, drinking, and personal hygiene purposes. All floors will be kept free from standing water. Disposable drinking cups will be provided, along with water coolers. Community drinking cups will not be permitted.
- Falling Objects - Hard hats, safety glasses, and steel-toed footwear will be required for personnel in all work areas.
- Traffic Safety - During normal business hours, there may be traffic coming to and from the site. Pedestrian traffic on the site may be at risk as traffic enters and exits the site.
- Noise - High noise levels (in excess of 85 decibels [dBA] for extended periods) can result in temporary and permanent loss of hearing. Areas where noise levels exceed 85 dBA will be posted and hearing protection will be provided and worn. Noise dosimetry will be performed as required by OSHA specifications.



### 5.3.1 Required Safety Measures for Physical Hazards

Listed below are the types of safety measures to be taken to reduce physical hazards that may be present at the site:

Potential Hazard	Required Safety Measure
Head Injury	Hard hats will be worn
Eye Injury	Safety glasses will be worn around moving machinery
Foot Injury	Safety shoes with steel reinforced toes will be worn
Other Injury	Guards are required on all moving parts, belts, and pulleys
Fire	Fire or tobacco smoking will be strictly prohibited within the containment area. Fire extinguishers will be readily available
Inhalation	The vapor and dust concentrations that might be encountered may exceed currently recommended exposure limits. Respiratory protection must be used if 80% of the exposure limits are exceeded. Appropriate protective equipment will be used, as directed by the PFS/SHSO
Noise	Ear plugs will be used whenever loud machinery is in use
Dermal exposure	Contact of sufficient duration to cause significant absorption of toxic components is highly unlikely. Repeated daily or prolonged contact with contaminated soil or water, however may be expected to defat the skin and perhaps over a long period of time lead to irritation and dermatitis. For this reason, direct skin contact with contaminated soil or water will be avoided by wearing protective gloves. However, if skin contact does occur, the exposed areas will be washed with soap and water and rinsed thoroughly
Equipment Failure	If monitoring instruments or any safety equipment fails, work will be suspended until repairs or replacements can be found. In case of working equipment failure, the PFS/SHSO will ensure that no hazardous conditions prevail before authorizing further work
Slip, Trip, and Falls	Appropriate warning signs will be posted, wherever this danger exists
Underground Utility	Location of all underground utility lines will be determined before commencing work. In case of breach of a line, electricity and/or gas supply will be shut off as necessary
Traffic Hazards	When working in an area open to vehicular traffic, the work area will be clearly delineated to restrict vehicular access. When working in public right-of-ways, lanes closures must be conducted in compliance with the guidelines set forth in the <i>State of California Manual of Traffic Controls</i> (Watch handbook) and any additional local ordinances or guidelines. Personnel exposed to vehicular traffic will use high-visibility clothing in accordance with the requirements of 8 CCR 1598(c).

### 5.3.2 Heat Stress

Heat stress and associated complications can be the most prevalent health concerns on sites, especially when Personal Protective Equipment (PPE) is used. Heat stress problems for workers can occur more often than chemical-related hazards and must therefore be regarded with caution.

If precautions are not taken, workers in PPE may experience varying degrees of heat stress. All workers will be encouraged to drink increased amounts of fluids (which will be readily available at the site at all times, at an appropriate location). All personnel will monitor each other to determine if any signs of heat stress become apparent. A work/rest regimen will be instituted to reduce heat-related exhaustion.

The PFS/SHSO will be trained to recognize the symptoms of heat rash, heat cramps, heat exhaustion, and heat stroke. Using the following procedures will help reduce the potential for workers to experience symptoms of heat stress:

- Provide plenty of liquids to replace loss of body fluids, including salt water solutions or commercial mixes such as Gatorade (registered product). Commercial mixes may be preferred by individuals on low sodium diets
- The following work/rest regimen will be followed for field workers performing light/moderate work at PPE level C or level B outdoors:

Work/Rest Regimen	Temperature	
	°F	°C
Continuous work	<79	<26
75% work/25% rest each hour	79	26
50% work/50% rest each hour	84	29
25% work/75% rest each hour	88	31

In order to evaluate the adequacy of this work/rest schedule, heart rate (pulse) determination will be made involving each worker leaving the work area and again approximately one minute after exit. If the exit pulse exceeds 0.7 times the difference between 220 and the age of the individual, or if the one minute pulse exceeds 110 beats per minute, then the work schedule will be reduced by 10 minutes and, therefore, the rest period will increase by the same 10 minutes each hour.

## 6.0 GENERAL HEALTH AND SAFETY REQUIREMENTS

Records documenting the site safety program will be maintained. This will include information about medical clearance for each individual working at the site, training, safety briefing, distribution of the HASP, incidents, safety completion report, and posting requirements. Records will be maintained in a health and safety logbook and appropriate health and safety forms.

Records will be kept consistent with all applicable CAL/OSHA regulations. The following records will be maintained at the offices of each subcontractor:

- Hazard communication training
- Hazardous waste site training
- Respiratory protection training
- Respirator assignment
- Medical surveillance
- Safety inspection reports
- Personal monitoring records
- Accident logs
- CAL/OSHA logs (200 form or equivalent).

The PM or PFS will maintain the following records at the site:

- Persons on-site, their affiliation, and purpose

- Telephone conversations
- Sampling activities
- Chain-of-custody forms
- Work progress
- Tailgate safety meeting forms
- Worker illness and (or) injury reports
- PEA Workplan (and changes)
- HASP (and changes)
- Daily work activities and conditions
- Accident log.

Subcontractors will maintain employee records in a manner consistent with the applicable regulations.

#### 6.1 MEDICAL CLEARANCE AND MONITORING

All personnel must obtain health and safety clearances before beginning work at the site. M&A Employees will be active participants in M&A's Medical Surveillance Program (see Appendix A). Project personnel who may be required to wear respirators must provide evidence that they have been cleared by a physician to wear respirators. All M&A field personnel are to be an active participant in M&A's Respiratory Protection Program. Subcontractor employees required to wear respirators will participate in their employers Respiratory Protection Program.

#### 6.2 SAFETY ORIENTATION MEETING

All field personnel must attend a safety orientation meeting before commencing fieldwork. The meeting will be scheduled and conducted by the PM, or PFS or SHSO. The dates of briefing sessions and attendees must be recorded on the Safety Meeting Form provided in Appendix B. Safety orientation/training meetings must be convened:

- Before field work begins
- When there are modifications to the HASP that are applicable to field personnel
- When additional personnel begin fieldwork.

The Compliance Agreement will be signed on the first day of field work prior to start-up. The SHSO will provide a copy of the Compliance Agreement to the CHSO within 1 week from initiation of field tasks. The Compliance Agreement form is provided in Appendix B. Safety meetings should be held every morning thereafter to discuss possible safety hazards for field operations. Safety meetings should be held every morning thereafter to discuss possible safety hazards for field operations.

Respirator fit testing should be conducted at the safety meeting for all individuals who have not been test fitted and who may be required to wear respirators. The meeting will include presentation of the HASP. The NIOSH report regarding confined spaces will be presented at the initial safety meeting if deemed appropriate by the PFS/SHSO.

### 6.3 TRAINING

Participation in field activities will not occur until all participants have been trained to the level required by their job function and responsibility. The specific types of training required include orientation for new employees, basic training for first time hazardous waste workers, supervisor training, advanced training, site-specific training, first aid, and refresher training.

Personnel on this project are required to have completed 40 hours of training (with annual 8-hour refresher training as required). This will include personnel involved with investigations and activities where contaminated soils/water may likely be encountered. Personnel for each task will be evaluated on site by the SHSO, as per HAZWOPER training.

### 6.4 DISTRIBUTION OF THE HASP

A copy of this SSP must be available to each employee and subcontractor. M/B&A employees and subcontractors must acknowledge reviewing of the SSP and agree to comply with its provisions in writing by signing the Acknowledgement Statement provided in Appendix B.

### 6.5 INCIDENT REPORTING

Injuries, exposure, illnesses, safety infractions, and other incidences must be reported to the SHSO within 24 hours of occurrence.

An incident is any event listed below:

- Illness resulting from chemical exposure or unknown causes
- Physical injury, including those that do not require medical attention
- Fire, explosions, and flashes resulting from activities performed by M&A personnel and their subcontractors
- Property damage
- Vehicular accidents occurring on-site or while traveling to and from the Site on related business
- Infractions of safety rules and requirements
- Unexpected chemical exposure (indicated by irritation of eyes, nose, throat, or skin).

Accidents on site where M&A is not retaining the subcontractor or individual will be reported if injury or illness relates to the M&A task. Serious or fatal on-site injuries will be reported as soon as possible to the CHSO.

### 6.6 SAFETY COMPLETION REPORT

Upon completion of the work, a Safety Completion Report must be submitted to the CHSO within five working days. The report should include a critical evaluation of this HASP and all approved notifications, names, and affiliations of individuals who worked at the site, exposure monitoring data with monitoring dates and decisions made, summary of incidences and action taken, if any, and recommendations for improving health and safety at similar sites. The Safety Completion Report form is provided in Appendix B.

## 6.7 POSTING REQUIREMENTS

The following information will be posted or readily available on site:

- Emergency phone numbers
- Directions to the nearest hospital
- HASP.

## 6.8 AUDITING

The success of the M&A's Health and Safety Program will be evaluated through statistical reporting (such as the OSHA 200 logs and insurance experience) and formal audits. Audits will be conducted by the CHSO. Audits may be announced or unannounced, and a formal health and safety audit report will be provided to the PM. Following completion of the field audit, a verbal review of concerns will be completed with the PM and SHSO. Inspections will be made to identify and evaluate hazards when:

- The program is first established
- New substances, processes, procedures, or equipment are introduced to the workplace that represent a new occupational safety and health hazard
- Whenever M&A is made aware of a new or previously unrecognized hazard.

## 6.9 INJURY AND ILLNESS PREVENTION PROGRAM (IIPP)

This entire document, including the appendices, serves as an IIPP. The persons with authority and responsibility for implementing the program are identified in Section 3.0.

The system for ensuring that employees comply with safe and healthy work practices includes:

- Generation of a HASP
- Auditing by the CHSO
- Daily field health and safety oversight by the SHSO
- Daily tailgate safety review meetings
- Review of employee and subcontractor training.

Employees and subcontractors who are not prepared to abide by the health and safety provisions contained within this document will not be allowed on-site. Field personnel who are under or associated with M/B&A must sign the SSP Compliance Agreement provided in Appendix B. Individuals observed violating requirements of this document will be given a formal "Notice of Violation." Should violations continue, or not be corrected, the individual(s) will be removed from the site(s).

The tailgate safety meetings, training sessions, and postings at the site are the three major sources of communication between employees. M&A's internal communication system includes:

- A reporting matrix between the SHSO and CHSO

- The communications associated with the auditing program.

The auditing program also complies with Title 8, CCR Section 3203(a)(4), which states that an employer must:

“Include procedures for identifying and evaluating work place hazards including scheduled periodic inspections to identify unsafe conditions and work practices.”

M&A's incident/accident reporting system is the procedure for investigating injury or occupational illness, in addition to its medical surveillance program. This document addresses the applicable sections of the Title 8 CCR, Sections 1509 (Construction) and 3203 (General) regarding the IIPP. Additional information regarding the internal programs of M&A, which are not specific, are discussed in M&A's HSM.

#### 6.10 FIT FOR DUTY

While M&A does not seek to interfere with the off-duty and personal conduct of its employees, subcontractors, clients, or visitors, certain types of off-duty conduct may interfere with the legitimate business interests of M&A at the site. It is the responsibility of M&A employees, subcontractors, clients, or visitors to ensure that they are fit to perform their required duties at the site. The SHSO has the responsibility to ensure that each individual signing the tailgate meeting is fit for duty. Activities that may affect the fitness of individuals at the site include:

- Consumption of alcohol
- Use of illegal or controlled substances
- Certain prescription or over-the-counter medicines
- Altered mental state
- Personal injury
- Fatigue.

Any individual found to be unfit for duty will be prevented from entering/working at the site until it is determined they are fit to return to duty. The SHSO will make an incident report and inform the PM of the incident. Subcontractors who have personnel unfit for duty will be notified and provided with the opportunity to replace the impaired individuals at the site.

#### 7.0 EXPOSURE MONITORING PLAN

Air monitoring may be used to identify and quantify levels of hazardous substances that could be present at the site. This may be accomplished by the use of personal monitoring instruments and direct reading instruments for personal and site monitoring, respectively.

A wind direction indicator may be utilized to ensure the direction that personnel will move when instructed to do so or in any emergency. Air monitoring equipment will be used to measure airborne levels of organic vapors during sampling activities. Monitoring may be done using a flame ionization detector (FID) or equivalent, for organic vapors. The FID will be calibrated prior to each day's activities. The calibration will be recorded in a logbook and the instrument will be re-calibrated during the day at the discretion of the PFS/SHSO. Background readings will be obtained at an upwind location.

Work will be started with all personnel using Level D personal protective clothing. For areas where chemicals vapor hazards are suspected, the first person entering the work zone will carry the FID and monitor concentration levels of vapors in the work area before anyone else is allowed into the work zone. The breathing zone will be monitored continuously. If FID measurements confirm the presence of vapors more than 1 ppm above background levels, field personnel wearing Level D personal protective equipment will be instructed to cease all work activities until engineering controls are instituted to prevent vapors from reaching the breathing zone. This can be accomplished by increasing air speed (mechanical fans), improving ventilation, or changing work activities (move personnel farther away). If engineering controls cannot reduce breathing zone readings to below 1 ppm above background levels, personnel in the work area will upgrade their protective equipment to Level C PPE. If FID measurements confirm the presence of vapors at a concentration of more than 5 ppm, field personnel will be instructed to move to an upwind location to allow air to circulate in the immediate work area. If concentrations diminish below 5 ppm, work may continue. If air concentrations in the breathing zone are sustained at more than 5 ppm above the background concentrations, Level B protective equipment will be used and the immediate area evacuated.

As an alternative to using Level B protection, work will stop, and a Certified Industrial Hygienist will monitor the site for specific chemicals and provide on-site control for the Health and Safety Program. If airborne organic vapor concentrations exceed 5 ppm in the breathing zone, work will stop and all site personnel will move upwind of the work site until levels decrease below 5 ppm.

In the event Level B protective equipment is used, one person working in the Exclusion Zone (EZ) will be fitted with a personal sampling pump (dosimeter). This system will remain in the EZ for 8 hours continuously, passing from person to person. At the end of the 8-hour period, the cartridge and filter will be removed and sent to a State-certified laboratory for analysis. Hence, the average exposure of personnel working in the EZ will be known and can be compared to the Time Weighted Average (TWA). This will act as a confirmation of the conclusions drawn by use of the FID.

## **8.0 SITE CONTROL**

The purpose of site control is to minimize potential contamination of workers, protect the public from the site's hazards, and prevent vandalism. In order to control activities and movement of personnel and equipment at the site, a site control program will be set up. The basic components of a site control program include establishing work zones, a buddy system, site security, safe work practices, sanitation, site communication, and visitor clearances into the work area(s). These components are described below.

### **8.1 SITE WORK ZONES**

Access to hazardous or potentially hazardous areas must be controlled to reduce the probability of physical injury to field personnel, visitors, and the public. A hazardous or potentially hazardous area includes any area where 1) field personnel are required to wear PPE or 2) operations involving machinery (e.g., drilling, excavating, etc.) are being performed. The establishment of work zones will help ensure that: personnel are properly protected against hazards present where they are working, work activities and contamination are confined to appropriate areas, and personnel are located and evacuated in an emergency. Three work zones will be established around any hazardous or potentially hazardous areas: the exclusion zone (EZ), the contaminant reduction zone (CRZ), and the support zone (SZ). The area work zones will be clearly identified, as appropriate, with barrier tape or other demarcation methods.

The exclusion zone will be maintained up to a distance of 15 feet from the work activity area. Protective clothing and equipment, as described below, are to be worn by all personnel working within the EZ.

The precise locations of all work areas, the decontamination area, equipment storage areas, rest areas, restroom facilities, and routes of exit will be established in the field. The support zone will be upwind from the work zone, when possible. All persons entering the subject site will identify themselves to the PM or PFS, or SHSO for proper documentation.

#### 8.1.1 Exclusion Zone

The EZ is defined as the area where contamination is either known or likely to be present, or where activities will create the potential to cause harm to personnel. The EZ initially will be established for each specific task based on the presence of contaminants within the area, and subsequently may be altered by the SHSO based on new data or observations. The outer boundary of the EZ, known as the Hotline, will be clearly delineated with barrier tape and/or traffic barriers. Access Control Point(s) (ACPs) will be established at the periphery of the EZ to regulate the flow of personnel and equipment into and out of the EZ, and to verify that relevant procedures for entry and exit are followed. Access will be restricted to personnel with appropriate training and documentation, and wearing appropriate PPE, as defined in this HASP. Eating, drinking, and smoking are prohibited within the EZ.

#### 8.1.2 Contaminant Reduction Zone

The CRZ is the area where personnel conduct personal and equipment decontamination. Its location will be established based on air monitoring results, and it will be surrounded by barrier tags, traffic cones, and/or warning signs. It is a transition area between contaminated areas and clean areas, and provides an area to prevent or reduce the transfer of contaminants that may be present on personnel or equipment returning from the EZ. No disposable outer protective work clothing will leave the CRZ. Emergency and first aid equipment, equipment resupply (gloves, etc.), and temporary rest facilities (chairs, shade, liquids, etc.) will be available in the CRZ.

Access into and out of the CRZ from the EZ is controlled through ACPs. The boundary between the CRZ and the SZ, the Contamination Control Line, separates the low contamination area from the clean SZ. Entry into the CRZ from the SZ will be controlled through ACPs. Activities to be conducted in the CRZ will require PE as defined in the decontamination procedures. Exit from the CRZ requires the removal of any suspected or known contaminated PPE and compliance with decontamination procedures. A primary and secondary CRZ will be established. Exit through the secondary CRZ will occur only during emergencies.

#### 8.1.3 Support Zone

The SZ is a clean area where the chance of encountering hazardous materials or conditions is minimal. It contains administrative and other support functions, including the Command Post (CP). CP personnel are responsible for supervision of all field operations and field teams. CP personnel also are responsible for maintaining internal and external communication and alerting the proper authorities in the event of an emergency. Telephone communication will be maintained by the use of cellular phones at the site. Emergency telephone numbers and hospital route maps will be kept here. Health and safety records and up-to-date copies of the HASP will be kept in the SZ. Break/conference, lunch, storage/supply, security, sanitation, and emergency medical facilities will be established in this area. Personnel may wear normal street clothes within this area. Eating, drinking, and smoking are permitted in this area.

### 8.2 SPILL CONTROL

Absorbent material for spill containment will be kept on-site, especially during any groundwater sampling. The absorbent material will also be present in the CRZ to contain any spills from the decontamination process.



### 8.3 BUDDY SYSTEM

The "Buddy System" will be used on site to:

- Work inside the EZ
- Warn partners of an impending hazard
- Periodically check the integrity of partner's PPE
- Provide aid in the case of injury, and notify the appropriate personnel of accidents.

Prior to working in the field, "buddies" will establish a time to communicate if either one is out of sight from the other person for an extended period. A way to communicate should also be agreed on prior to entry into the work area.

### 8.4 SITE SECURITY

Site security is necessary to:

- Prevent the exposure of unauthorized, unprotected people to site hazards;
- Prevent theft; and
- Avoid interference with safe working procedures.

Personnel and vehicle entry will be restricted in established work zones. The responsibilities of personnel include:

- Limiting access to authorized personnel only. Requiring identification of all personnel requesting access to the work zones (i.e., SZ, CRZ, or EZ)
- Ensuring that all visitors to the site who will not be involved in specific work operations have a valid purpose for entering the site and approval for access from the SHSO. The SHSO will ensure that visitors entering work zones have the appropriate training, and have read and signed the HASP
- Requiring all personnel accessing the work zones to sign in and out
- Excluding unauthorized personnel from the site. Advising unauthorized personnel attempting to gain access to the site that they are trespassing and will be prosecuted for unauthorized entrance to the site. Security personnel will make all reasonable efforts to record a description of the trespasser and their vehicle
- In the event of a fire, explosion, release of airborne contaminants, flood, or other emergency that requires the evacuation of personnel, security personnel will limit site access to only those personnel authorized by the site emergency response coordinator. The SHSO will initiate a head count, review the sign-in log, and determine which personnel, if any, are not accounted for
- Keeping a daily security log including entry/exits log, vehicle log, results of security checks, and details of any security problems.

## 8.5 SAFE WORK PRACTICES

To maintain a strong safety awareness and enforce safe procedures, the following personnel requirements and prohibitions will be established for the site:

- The subject work area will be restricted to authorized visitors and personnel. These individuals will be required to attend a tailgate safety meeting upon entering the subject area during which they will be informed of the various work zones and facilities, the health and safety hazards associated with their assigned work activities, control measures, the care and use of personal protective equipment, emergency action plans, and other pertinent information. Tailgate safety meetings will be conducted on a daily basis at the beginning of each shift. Attendance rosters will be recorded and maintained by the PFS
- All persons entering the site will be required to identify themselves to the PFS. Persons who have not attended a tailgate safety meeting on that day will be required to do so with the SHSO or other authorized representative. Persons unfamiliar with the site will be informed of site hazards and instructed to avoid contact with contaminated surfaces, soils, sample materials, or related equipment, and will be instructed to remain upwind from all active work areas. Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in the EZ and CRZ. Drinking water or equivalent fluids may occur in the CRZ at the discretion of the SHSO. Before wearing Level C PPE, personnel may drink fluids in the CRZ. They will also complete the decontamination procedures necessary to exit the EZ, remove their respiratory protection, remove all protective gloves, and wipe their hands and face with premoistened towelettes
- Any skin contact with contaminated or potentially contaminated surfaces, samples, or equipment will be avoided
- Site personnel will use the "Buddy System" when performing duties in the EZ and CRZ work zones. Communications between members will be maintained at all times. Visual contact will be maintained between buddy pairs at all times
- As appropriate, equipment will be bonded and grounded, and will be spark resistant
- A fire extinguisher will be available for use in the subject area during all working hours. If the travel distance to the extinguisher from any point in the area where work is in progress is greater than 50 feet (15.3 meters), then additional fire extinguishers will be furnished and strategically located so that the travel distance does not exceed 50 feet (15.3 meters)
- A portable emergency eyewash station will be located strategically in the work area. The eye wash station will be capable of flushing the eyes with copious amounts of water
- Upon leaving the CRZ, all persons will adhere to the decontamination procedures outlined in this HASP
- Removal of materials from protective clothing or equipment by blowing, shaking, or any other means which may disperse contaminated materials into the air is prohibited
- Legible precautionary labels will be affixed to containers of raw materials, intermediate products, mixtures, waste debris, and contaminated PPE
- Contaminated PPE will not be removed from the site until it has been cleaned or properly packaged or labeled

- Hands will be thoroughly washed upon leaving contaminated or suspected contaminated areas before eating, drinking, or other such activity
- All hazardous wastes, soil samples, and other contaminated materials which are removed from the subject site will be accompanied by appropriate shipping papers
- A first-aid kit suitable for use at hazardous waste sites will be located in the SZ at each contamination reduction corridor
- No running or horseplay
- The required level of PPE must be worn by all on-site personnel
- No facial hair that interferes with a satisfactory fit of the mask-to-face seal is allowed on personnel required to wear respiratory protection
- Medicine and alcohol can worsen the effects from exposure to toxic chemicals. Prescribed drugs will not be taken by personnel on operations where the potential for absorption, inhalation, or ingestion of toxic substances exists, unless specifically approved by a qualified physician. Alcoholic beverage intake will not be allowed
- Safety devices on equipment must be left intact and used as designed
- Equipment and tools will be kept clean and in good repair, and used only for their intended purpose.

## 8.6 STANDARD OPERATING PROCEDURES

Employees and subcontractors are expected to follow the standard operating procedures listed below while involved in work at the site:

- Buddy System: A minimum of two workers will be on the site at all times during all operations. The buddy pair(s) will maintain visual or voice contact at all times. In addition, a minimum of one person will remain in the SZ, at all times
- Personal Protective Equipment: All persons entering the EZ will do so while wearing the PPE equipment documented in this HASP. Such individuals will be trained in the proper use, care and maintenance of this equipment, will have submitted to a physical examination by a licensed medical physician, and will have been deemed physically fit to wear such equipment. The user will inspect such equipment before donning. Donned gloves and boots will be taped to protective clothing to provide closure
- Emission control: Wet methods will be used to control emissions of volatile hydrocarbon or other gases and vapors, liquids, or particulate materials
- Observance of Unanticipated Hazardous Materials: In the event, unanticipated hazardous material(s) are observed or symptoms of distress are experienced by workers, the SHSO will conduct an investigation. He/she may collect samples in order to ascertain the identity of the material(s)
- Symptoms of Distress: The SSO and each subcontractor field supervisor will periodically observe personnel for symptoms of distress. Indications of such adverse effects include:
  - Changes in complexion, skin discoloration
  - Signs of uncoordination
  - Changes in demeanor, disposition

- Excessive salivation, papillary response
  - Changes in speech patterns
  - Nervousness or excitability
- Field personnel are required to contact their field supervisor upon experiencing ill effects such as:
  - Headache or dizziness
  - Blurred vision
  - Irritation to the eyes, mucous membranes, respiratory tract or skin
  - Heat stress
- Daily Shutdown: All mechanical equipment will be parked and/or stored in a safe location designated by the PM, PFS, or SHSO
- Stop Work Orders: In the event work is performed contrary to the provisions of the specifications and/or approved work plans, or contrary to the conditions of any applicable permit or certificate, or if upon inspection, it is determined that continuation of authorized work is likely to endanger any person or public and/or private property, then the work will be stopped by notice in writing served by the PM or any other authorized representative. . An example of a Stop Work Order is included in Appendix B.

## 8.7 SANITATION

An adequate supply of potable water will be provided. Potable drinking water containers will be capable of being tightly closed. The "common" drinking cup is prohibited. Adequate washing facilities for employees engaged in operations at the Site will be provided. The facilities will be in proximity to the active work area and will be equipped to handle both sexes.

## 8.8 SITE COMMUNICATION

Successful communication between field teams and SZ personnel is essential. An internal communication system among on-site personnel and an external communication system between on-site and off-site personnel will be established.

### 8.8.1 Internal Communication System

The internal communication system will be used to relay health and safety information, communicate changes in work, maintain site control, and alert personnel in case of emergencies. Verbal communications will be the primary method of routine communication.

### 8.8.2 External Communication System

The external communication system between on-site and off-site personnel is necessary to report to management, maintain contact with essential off-site personnel, and coordinate emergency response. Cellular telephones maintained in the SZ will be the primary means of external communication, and will be used to notify off-site emergency response agencies if incidents and to request assistance.

## 8.9 VISITOR CLEARANCES

Entry to hazardous areas will be limited to individuals who must work in those areas. Unofficial visitors must not be permitted to enter hazardous areas while work in those areas is in progress. Official visitors should be

discouraged from entering work areas, but may be allowed to enter only if they agree to abide by the provisions of this document, follow orders issued by the SSO, and sign a compliance agreement that they were informed of the potential dangers that could be encountered in the areas.

## **9.0 PERSONNEL PROTECTIVE EQUIPMENT (PPE)**

The purpose of PPE is to isolate or protect personnel from the chemical and physical hazards that may be encountered at the work site. A site-specific PPE program has been developed. The various components of this program are levels of protection, respirator care, PPE inspection, and levels of protection per task.

PPE and safety precautions will be appropriate to protect against the known and potential health hazards in the subject area. The protective equipment required has been selected based on the contaminant type, anticipated concentrations in the air, and known routes of entry into the body.

### **9.1 LEVELS OF PROTECTION (LOP)**

The LOP required for the investigation of the source of communication will be continually evaluated as fieldwork progresses. It should be noted that there may be increases or decreases in the LOP. The following levels of protection have been defined based on a review of work site histories and tasks to be performed.

#### **9.1.1 Level D**

USEPA Level D personnel protective equipment for all personnel entering the work area, unless the SHSO decides to upgrade the level of protective equipment to be used. Level D consists of the following:

- Work clothes (sleeved shirts and long pants)
- Construction quality boots with steel toe and shank
- Inner polyvinyl chloride surgical or latex gloves (when working with water or wet soil)
- Outer cotton or leather gloves
- Hard hats
- Safety glasses and hearing protection.

At a minimum, the following PPE will be discarded and replaced daily:

- Inner polyvinyl chloride surgical or latex gloves
- Outer polyvinyl chloride surgical or latex gloves.

New outer gloves should be used for each sample.

#### **9.1.2 Modified Level D**

Modified Level D personnel protective equipment may be required by the SHSO if monitoring data or the tasks to be performed suggests that personnel entering the work area need additional protection. Modified Level D consists of the following:

- Uncoated Tyvek

- During intrusive activities, Tyvek sleeves will be worn over the cuff of protective gloves and Tyvek legs will be worn over the upper portion of disposable boot covers. Tape will be used to seal the joints between Tyvek, protective gloves, and boot covers
- Protective disposable gloves (inner latex, outer nitrile or butyl)
- Chemical-resistant outer gloves
- Boots (PVC, neoprene or other chemically resistive material) with steel toe and shank, or boot covers
- Splash-resistant goggles will be worn if splashing may occur
- Hard hats.

### 9.1.3 Level C

Level C consists of Modified Level D gear plus:

- Full- or half-face respirators and NIOSH/OSHA approved cartridges sealed in a plastic bag and ready for immediate donning. The cartridges to be used will be HEPA organic vapor cartridges with dust mist pre-filter.

### 9.1.4 Level B

Level B is used when a high level of respiratory protection is required. This involves atmospheres with IDLH concentrations of specific substances that do not represent a skin hazard or atmospheres containing less than 19.5% oxygen. Level B gear consists of the following:

- Pressure-demand, full-face, self-contained breathing apparatus (SCBA) or pressure-demand supplied-air respirator with escape SCBA
- Chemically-resistant tyvek suits (wet soil)
- Uncoated tyvek suits (dry soil)
- Chemically-resistant inner and outer gloves
- Chemically-resistant steel-toed rubber boots
- Hard hat
- Hearing protection
- Two-way radio communications.

Level B personal protective equipment will not be available on site. Should the SHSO determine that Level B protection is required, the CHSO will be contacted to make arrangements for a Certified Industrial Hygienist to evaluate the health and safety requirements at the site and prepare a more detailed HASP.

## 9.2 RESPIRATOR CARE

Each individual is responsible for inspecting and maintaining his or her own respirator. Before being taken into the field, all respirators will be inspected, cartridges (if used) installed, a positive and negative pressure check con-

ducted, and the entire respirator assembly will be sealed in a plastic bag. After the respirator is used, the following cleaning procedures will be used:

- Cartridges for air-purifying respirators will be removed and disposed of as contaminated PPE
- The respirator face piece interior and exterior will be wiped down with pre-moistened towelettes, such as baby wipes, and subsequently sealed in a plastic bag for transport to the respirator cleaning station at the personal decontamination facility
- After a respirator has been cleaned and rinsed, it will be patted dry with a clean towel and stored.

### 9.3 PPE INSPECTION

PPE inspection will be done before use, during use, and after use. The following will be inspected during the course of the work activities at the site.

#### 9.3.1 Clothing

Before use:

- Determine that the LOP is correct for the specific task at hand by consulting with the SSO
- Visually inspect for:
  - Imperfect seams
  - Tears
  - Malfunctioning closures

During use look for:

- Evidence of chemical attack, such as discoloration, swelling, stiffening, and softening. However, chemical penetration can occur without any visible effects
- Closure failure
- Tears
- Punctures
- Seam discoloration.

#### 9.3.2 Gloves

Before use, pressurize glove to check for pinholes. Blow into glove and make sure no air escapes.

#### 9.3.3 Respirator

Before use:

- Make sure that respirators have been adequately cleaned
- Check material condition for signs of deterioration and distortion

- Examine cartridges or canisters for expiration dates and ensure that they are the proper type for intended use. Also, make sure that the canisters or cartridges have not been previously used.
- Perform a negative/positive pressure test.

After use, make sure that respirators have been adequately cleaned.

#### 9.4 LEVEL OF PPE PROTECTION

The work being performed will be conducted in Level D or modified Level D. Levels of protection will be upgraded in accordance with action levels provided in Table 2: Response Level and Action. PPE ensembles have been selected to ensure a level of protection greater than the minimum required to protect employees from anticipated hazards. The HASP will further assess the workplace hazards and ensure that the proper PPE ensemble is provided and worn during work activities.

#### 9.5 EQUIPMENT REQUIRED TO BE AVAILABLE ON SITE

Items required on-site include:

- First-aid kit with eye wash
- Fire extinguisher
- Construction tape and barriers to delineate work zone
- Spill containment equipment
- Decontamination equipment
- NO SMOKING signs
- A vehicle must be kept on site when personnel are working for the transport of slightly injured personnel to the hospital (severely injured personnel MUST be transported by paramedics).

### 10.0 DECONTAMINATION METHODS

Decontamination procedures will be implemented to protect personnel from hazardous substances that may contaminate and/or eventually permeate protective clothing, respiratory protective equipment, tools, vehicles, and other equipment used on-site; to protect all site personnel by minimizing the transfer of harmful materials into clean areas; to prevent mixing of incompatible chemicals; and to protect the community by preventing uncontrolled transportation of contaminants from the site. Personnel exiting the EZ will pass through the CRZ, where protective gear will be cleaned and/or discarded. There will be one CRZ per EZ. The particular location of the CRZ will be determined during the initiation of site activities.

#### 10.1 PERSONNEL DECONTAMINATION

Personnel decontamination facilities will be supplied with a potable water supply. All personnel leaving the EZ must exit through the CRZ and perform appropriate decontamination procedures to prevent the transfer of contaminated materials into clean areas. The types of contaminants that they may have contacted and their function in the CRZ should determine the extent of their decontamination.



The decontamination process consists of a series of procedures performed in a specific sequence, depending on the level of PPE worn and site contaminants present. Before the start of work activities, the number and layout of decontamination stations will be determined. To prevent cross-contamination, each procedure will be performed at a separate station, and stations will be arranged in order of decreasing contamination. In the event that Level C or B equipment is used, the following procedures will be instituted for decontamination all articles leaving the EZ and CRZ to prevent or reduce the physical transfer of contaminants by people and/or equipment from the subject area.

#### PERSONNEL EXITING EZ:

- If the worker is heavily contaminated, water will be used to remove contamination prior to entering the CRZ. Water will be contained in a bucket or tub
- Deposit used equipment in the EZ or on tables in the CRZ for subsequent decontamination
- Scrub outer boot covers or polyvinyl chloride (PVC) overboots and outer gloves with decontamination solution or detergent and water
- If gross contamination is evident, remove contamination, to the extent practicable, from disposable suit and/or tank using disposable wipes or towels, with assistance from CRZ technician
- Remove tape around boots and gloves. Remove outer boot covers or PVC overboots and outer gloves. Discard tape, boot covers, and outer gloves in appropriate container
- Remove inner gloves and discard in appropriate container
- Thoroughly wash hands and face
- All PPE, including respirator, protective clothing and boots, will be removed and placed in appropriately marked containers, for disposal or for decontamination (boots and respirator minus cartridges) as the individual steps from the CRZ to the SZ
- Used boots, respirators, and other reusable personal protective equipment will be dismantled (if possible), decontaminated with mild detergent and warm tap water, and rinsed with clean tap water in the CRZ
- The spent solutions, brushes, and the like will, until shown otherwise, be considered contaminated and so treated
- Workers/visitors will be required to wash thoroughly with soap and water prior to leaving the site and will be instructed to remove work clothes and shower as soon as possible thereafter.

#### 10.2 EQUIPMENT DECONTAMINATION

Vehicles and equipment will be decontaminated before exiting the EZ. People and/or equipment from the subject area will institute the following procedures for decontaminating all vehicles and equipment leaving the EZ and CRZ to prevent or reduce the physical transfer of contaminants:

- An equipment decontamination pad or area will be designated for cleaning large equipment utilized during work activities
- All sampling devices will be decontaminated by scrubbing or wiping a decontamination solution and water on the device

- Tools that are difficult to decontaminate will be kept in the EZ and handled only by workers using the appropriate PPE
- Respirators will be decontaminated and sanitized before being reused
- Following decontamination of equipment using steam cleaning, a final steam/water rinse will be applied
- The spent solutions, brushes, and the like will, until shown otherwise, be considered contaminated and so treated
- Wash materials will be disposed of properly
- All porous equipment, which is believed to be contaminated, will be disposed of as hazardous waste.

### 10.3 EMERGENCY DECONTAMINATION

During emergency situations, decontamination will be performed to the maximum extent possible without compromising medical attention to the victim. If decontamination may aggravate or cause more serious health effects, or if injuries are life threatening, prompt life saving, first aid and medical treatment should be administered without decontamination or concurrently with it. Outer garments can be removed (depending on the weather) if it does not delay or interfere with medical treatment, or aggravate the problem. Respirators and backpack assemblies must always be removed. If outer garments cannot be safely removed, the victim should be wrapped in plastic, rubber, or blankets to minimize contamination of emergency transport vehicles and medical personnel. Whenever possible, site personnel should accompany the contaminated victim to the medical facility to advise of matters involving decontamination.

### 10.4 EQUIPMENT FOR DECONTAMINATION OF PERSONNEL, PPE, AND HEAVY EQUIPMENT

The following is a list of equipment needed to conduct proper decontamination of personnel, PPE, and equipment:

- Drop cloths of plastic or other suitable materials on which heavily contaminated equipment and other protective clothing may be deposited
- Collection containers, such as drums or suitably lined trash cans for storing disposable clothing and heavily contaminated personal protective clothing or equipment that must be discarded
- Lined box with absorbents for wiping or rinsing off gross contamination and liquid contaminants
- Galvanized tubs, stock tanks, or children's wading pools to hold wash and rinse solution. The tubs should be large enough for a worker to place a booted foot inside
- Appropriate wash solutions to wash off and reduce hazards associated with the contaminants
- Long-handled, soft-bristled brushes to scrub contaminants off PPE and for general exterior cleaning of heavy equipment
- Paper or cloth towels for drying protective clothing and equipment
- Metal or plastic drums for contaminated wash and rinse solutions
- Plastic sheeting, sealed pads with drains, or other appropriate methods for containing and collecting contaminated wash and rinse solutions

- Soap or wash solutions, wash cloths, and towels for personnel.

## 11.0 EMERGENCY RESPONSE PROCEDURES

This Emergency Response/Contingency Plan (ERP) has been developed to include instruction and procedures for personnel evacuation and procedures for medical emergencies that may occur during the project. All personnel emergency conditions require actions conducted in a manner that minimizes health and safety risks. All on-site personnel must be familiar with the ERP. Additions to the ERP will be incorporated into this HASP by addendum. All aspects of the plan will be addressed as part of the site-specific health and safety training required for all personnel.

### 11.1 RESPONSIBILITIES

#### 11.1.1 Corporate Health and Safety Officer

The CHSO, or designee, will oversee the development and approval of the ERP and perform audits to ensure that the ERP is in effect and that all pre-emergency requirements are met. The CHSO will act as a liaison to applicable regulatory agencies and notify OSHA of reportable accidents or fatalities.

#### 11.1.2 Project Field Supervisor

The PFS will be responsible for ensuring that all site work is performed in a safe manner. In an emergency situation, the PFS may serve as a focal point for the dissemination of information or as a Community Relations Manager. On this site, the PFS will act as the Emergency Coordinator.

#### 11.1.3 Project Manager

The PM is ultimately responsible for field implementation of the ERP. This includes communication specific health and safety requirements to the PFS and consulting with the CHSO regarding planned activities, unforeseen conditions and for resolving any questions with identified safety procedures.

#### 11.1.4 Site Health and Safety Officer

The SHSO is responsible for assisting the CHSO in development of the ERP and ensuring its provisions are abided by on-site. The SHSO is responsible for seeing that all personnel are evacuated safely and that all equipment are shut down or secured in the event of a stop work order or evacuation. The SHSO will complete an Accident/Incident form, which includes the following:

- A description of the emergency
- Date, time, and name of all persons/agencies notified and their response
- A description of corrective actions implemented or other resolution of the incident.

#### 11.1.5 Emergency Coordinator

The Emergency Coordinator is responsible for implementing the ERP whenever conditions warrant. The Emergency Coordinator is responsible for ensuring the emergency treatment, transport, and evacuation of site personnel and notification of the appropriate individuals when the ERP has been implemented. The Emergency Coordinator also is responsible for prior notification of emergency services (fire, police, hospital, ambulance, etc.)

about the nature and duration of work expected on the site, types of COCs, possible health and safety effects and the anticipated emergency conditions.

#### 11.1.6 On-Site Personnel

All on-site personnel are responsible for knowing the ERP and its procedures. Personnel will be expected to notify the Emergency Coordinator of occurring or impending emergencies and to cooperate fully once the plan has been implemented. All information is to be communicated to the Emergency Coordinator. All media and public inquiries are to be directed to the Emergency Coordinator.

### 11.2 POTENTIAL EMERGENCIES

The activities, layout, and hazards of the site have been evaluated to determine anticipated potential emergencies. Five categories of emergencies have been identified. The list will be revised in the event on-site conditions or operations warrant. The ERP will be updated in case of a revision or addition to the list. Anticipated emergencies include:

- Injury or illness
- Fire
- Explosion
- Spill/environmental release
- Natural disaster/hazard.

At this site, personnel accidents requiring first aid, potential fires, and potential exposure to soil with COC are emergencies that may arise.

### 11.3 PUBLIC RESPONSE AGENCIES

Contact between site personnel and local emergency services will assist in developing a good working relationship and provide an opportunity for the development of effective, overlapping emergency plans. The Emergency Coordinator will contact the local hospital before beginning work on the site. The nature and duration of work, types of COCs and the potential emergency conditions will be discussed.

### 11.4 EMERGENCY CONDITIONS

Whenever there is an emergency at the site, the following steps will be taken:

- An immediate report of the emergency will be made to the PM and PFS
- The emergency will be assessed by the PFS and identify:
  - The name, location, and telephone numbers of the appropriate agencies
  - The nature of the emergency
  - Hazardous conditions (fire, explosion, etc.)
  - The amount of material involved or released
  - The extent to which evacuation should occur

- The PFS will notify all personnel on-site and activate the appropriate response
- All work will be stopped and evacuation initiated if appropriate
- The PFS will notify the following as necessary:

Agency	Type of Incident	Phone Number
Ambulance	Any situation requiring immediate medical attention	911
Hospital	Any situation requiring immediate medical attention	(562) 498-1000
Fire Department	Any uncontrollable fires	911
Police Department	Any crimes	911
USEPA	Damage to the environment	(800) 342-4636
Meredith & Associates	Any accident or incident	(310) 670-9221

Should the emergency draw the attention of the public, all inquiries are to be directed to the PFS.

### 11.5 EMERGENCY EQUIPMENT

In addition to equipment that is to be used only in the event of an emergency, other equipment used in the event of an emergency also may be used as part of regular operations, this may include PPE, telephones, etc. The following emergency equipment will be maintained at the first-aid station:

- Fire extinguisher
- Cell phone
- First-aid kit
- Eye wash solution.

### 11.6 ON-SITE PERSONNEL INJURY/ILLNESS

First aid will be administered on-site as necessary. Personnel requiring medical attention will be transported or emergency medical services will be contacted to respond. The medical data sheet will accompany the injured person. The route to the hospital is shown on Figure 1. This map will be posted at the first-aid station and is to be taken with the driver of the injured individual. The hospital will be notified of the impending arrival and provided with pertinent information while the injured individual is being transported.

Basic first aid procedures must be followed in the event a person working on site is injured. Depending on the severity of the injury, emergency medical response may be sought. If the person can be moved, they will be taken to the edge of the work area where emergency first aid can be administered. If necessary, transportation to the local emergency medical facility will be provided.

If the injury to on-site personnel involves chemical exposure, the following first-aid steps must be taken immediately:

- Eye Exposure -- If foreign material (liquid or solid) gets into the eyes, wash eyes immediately for at least 15 minutes using water and lifting the lower and upper lids occasionally. Obtain medical attention immediately.
- Skin Exposure -- Wash skin immediately with water. Obtain medical attention immediately.

- Inhalation -- If a person has inhaled a large amount of organic vapor, dust, etc., move them to fresh air at once. Obtain medical attention immediately. If breathing has stopped, appropriately trained personnel and/or medical personnel should perform CPR. Keep the person warm and comfortable.
- Ingestion -- If liquid or solid is swallowed, obtain medical attention immediately. The Poison Control Center also must be consulted.

The SSO must inform the PM of any injury/accident and a written report of the accident, its causes and consequences must be submitted to the client within 48 hours of the incident.

#### 11.6.1 Temperature Related Problems

First aid for all forms of heat stress includes cooling the body. This may involve removing PPE and moving the person to a cooler environment to rest.

#### 11.6.2 Emergency Decontamination

In case of a medical emergency, gross decontamination procedures will be implemented and the person transported to the nearest medical facility. If a life threatening injury occurs and the injured person cannot be decontaminated without causing additional injuries, every effort will be made to ensure exposure of others to potential COCs is minimized. The medical facility will be notified of the potential COC present and the exposure prevention measures that can be employed during treatment.

Decontamination measures for emergencies will be based on the toxicity of the COC on-site and the immediacy of the emergency.

#### 11.6.3 Fire

M&A will not respond to any fire that is larger than is able to be handled by the on-site portable fire extinguishers. Any fire too large to be extinguished by the portable extinguishers will be reported immediately to the local fire department by dialing 911.

There are three basic ways to extinguish a fire:

- Take away its air
- Take away its fuel
- Cool the fire.

To put out a fire:

- Put it out with a fire extinguisher, water or other liquid (e.g., coffee)
- Move all flammable materials away from the fire
- Smother the fire with a coat or other heavy, if possible wet, object.

To use a fire extinguisher:

- 1) Pick the extinguisher up by the handle.

- 2) Pull the ring at the top to release the safety pin
- 3) Keep the extinguisher upright, aim at the base of the fire, and squeeze the handle.

No individual should attempt to put out a fire unless they are sure they are able to do it. **SUMMON HELP IMMEDIATELY IF YOU THINK YOU ARE UNABLE TO PUT IT OUT!**

The fire extinguishers at the site are multi-purpose dry chemical (ABC). These types of extinguishers are effective on ordinary combustibles, flammable liquids, and electrical equipment. The effective range is approximately 5 to 15 feet. The contents will be discharged in 8 to 25 seconds.

The first five minutes are the most critical in putting out a fire. It is crucial that the fire department be notified as soon as possible when a fire is discovered. Do not hesitate to report small fires. The fire can spread and become a threat to everyone's safety.

Most fire related deaths occur for poisonous gases, smoke, and panic. Few deaths are the result of being burned. Panic is the most common cause of death in a fire situation. In the event of a fire, know what to do and **DO NOT PANIC.**

If a fire occurs while working within a building, evacuate by the building by doing the following:

- 1) Listen to the instructions of the PFS
- 2) Walk to the nearest exit unless instructed otherwise
- 3) To prevent a bottleneck, move to the assembly area
- 4) Await further instructions.

#### 11.6.4 Explosion

An explosion can be the most difficult emergency to deal with. Reasons include trauma, death, fire, unstable structures, secondary explosions, toxic clouds, and destruction of emergency equipment. The following, measures, and backup systems may be required:

- Initiate evacuation procedures
- Notify appropriate response agencies (fire, police, etc.)
- Assess situation – are secondary emergencies occurring or about to occur?
- Turn off or remove sources of explosives
- Attend to the injured
- Check for exposed live utilities
- Initiate spill response measures (if necessary).

#### 11.7 SPILLS/ENVIRONMENTAL RELEASE

The first responder on the scene is responsible for spill containment until additional help arrives. Upon arriving at the scene, the individual will determine:

- The location of the spill
- If liquid, direction of flow
- If possible the identity of the leaking material
- Potential hazards to responders.

If the leaking material is not completely characterized, the maximum PPE should be worn and only experienced individuals should enter the area.

Spilled liquids may be contained by the construction of dikes, diversion of spills to specific areas, inlet blockage, or solidification. Special attention should be given to quickly preventing spills from leaving the confines of the property and entering the public right-of-way or sewer/storm drain system.

Equipment or supplies for controlling spills may include the following:

- Sandbags
- Sorbent socks, pillows, etc.
- Dry granular sorbent
- Salvage pumps
- Drums
- Plastic sheets, tarps, salvage covers, etc.
- Sorbent booms
- Barrier booms.

In addition to containing the spilled materials, the source of the spill must also be controlled. For leaking containers (e.g., drums, small tanks, etc.) the material should be transferred to vessels capable of storing the liquids. Used materials such as sorbent pads/booms/sheets or granular sorbents are to be collected in the appropriate storage containers until they can be disposed of properly.

Once containment of the spill has occurred, and/or sufficient help has arrived, the PM must be notified. The PM then will notify the appropriate parties (e.g., USEPA, local fire department, etc.) to report the release.

## 11.8 NATURAL HAZARDS

In the event of a natural disaster, work will be halted and the site secured as possible. Restoration after the event will include a recheck of all operating systems, containment and cleanup of spills and resumption of operations.

## 11.9 BOMB THREATS/CIVIL COMMOTION

Bomb threats, vandalism, arson, riots, and assaults are almost impossible to anticipate. However, using common sense and implementing security measures can prevent or reduce their impact and proper response can help control further loss.



#### 11.10 HAZARDOUS MATERIALS INFORMATION

EPA-INFO	(800) 342-4636
TOXLINE	(301) 496-1131
CHEMTREC (24-hour, emergency)	(800) 424-9300
ORNL, Toxicology Information Response Center	(615) 576-1743
Poison Control Center	(800) 682-9211

#### 11.11 WORK SITE ADDRESS

1845 East Willow Street  
Signal Hill, California

#### 11.12 CONTACTS

Lynn Edlund or Roger McCracken  
MEREDITH & ASSOCIATES, INC.  
9841 Airport Blvd. Suite 1010  
Los Angeles, California 90045  
Telephone: (310) 670-9221  
Fax: (310) 670-9512

#### 11.13 HOSPITAL ADDRESS AND ROUTE

Address: Community Hospital of Long Beach  
1720 Termino Avenue  
Long Beach, California 90804  
Telephone: (562) 498-1000

##### Hospital route:

- Exit site onto 27<sup>th</sup> Street
- Turn right (east) onto 27<sup>th</sup> Street
- Proceed approximately 0.12 mile to Cherry Avenue. Turn right (south)
- Proceed approximately 1.0 mile to Pacific Coast Highway. Turn left (east)
- 
- Proceed approximately 1.25 miles to Termino Avenue. Turn right (south)

The hospital is on the left side of the street at the northeast intersection of Termino Avenue and East Wilton Street.

## TABLES

**TABLE 1**  
**CHEMICAL EXPOSURE LIMITS**

Chemical	Exposure Limits (ppm)			
	CAL/OSHA PEL	TLV	STEL	IDLH
Acetone	750 ppm	250 ppm	1,000 ppm	2,500 ppm
Aluminum	10 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	NA	NA
Anthracene	0.2 mg/m <sup>3</sup>	NA	NA	NA
Antimony	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	NA	50 mg/m <sup>3</sup>
Arsenic	0.2 mg/m <sup>3</sup>	0.002 mg/m <sup>3</sup>	NA	5 mg/m <sup>3</sup>
Barium	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	NA	50 mg/m <sup>3</sup>
Benzene	1.0 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	5.0 ppm	500 ppm
Benzo(a)perylene	0.2 mg/m <sup>3</sup>	NA	NA	NA
Benzo(k)fluoranthene	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	NA	NA
Beryllium	0.002 mg/m <sup>3</sup>	0.0005 mg/m <sup>3</sup>	0.005 mg/m <sup>3</sup>	4.0 mg/m <sup>3</sup>
Cadmium	0.005 mg/m <sup>3</sup>	NA	NA	9.0 mg/m <sup>3</sup>
Carbon disulfide	4.0 ppm	1.0 ppm	12 ppm	500 ppm
Chromium (III)	0.5 mg/m <sup>3</sup>	0.5 ppm	NA	25 mg/m <sup>3</sup>
Chromium (VI)	0.5 mg/m <sup>3</sup>	0.001 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup> (ceiling)	15 mg/m <sup>3</sup>
Chrycene	0.2 mg/m <sup>3</sup>	NA	NA	NA
Cobalt	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>	NA	20 mg/m <sup>3</sup>
Copper	1.0 mg/m <sup>3</sup>	1.0 mg/m <sup>3</sup>	NA	100 mg/m <sup>3</sup>
Cyanide	5.0 mg/m <sup>3</sup>	NA	NA	NA
Dichlorodifluoromethane	1,000 ppm	1,000 ppm	NA	15,000 ppm
Ethylbenzene	100 ppm	100 ppm	125 ppm	800 ppm
Fluoranthene	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	NA	NA
Hexone	50 ppm	50 ppm	75 ppm	500 ppm
Indeno(1,2,3-cd)pyrene	0.2 mg/m <sup>3</sup>	NA	NA	NA
Iron	1.0 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	NA	2,500 mg/m <sup>3</sup>
Lead	0.05 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	NA	100 mg/m <sup>3</sup>
Manganese	5.0 mg/m <sup>3</sup>	1.0 mg/m <sup>3</sup>	NA	500 mg/m <sup>3</sup>
Mercury	0.01 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>	NA	10 mg/m <sup>3</sup>
Methyl ethyl ketone	200 ppm	200 ppm	300 ppm	3,000 ppm
Methylene chloride	25 ppm	NA	125 ppm	2,300 ppm
Nickel	1.0 mg/m <sup>3</sup>	0.015 mg/m <sup>3</sup>	NA	10 mg/m <sup>3</sup>
Phenanthrene	0.2 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	NA	NA
Silver	0.01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>	NA	10 mg/m <sup>3</sup>
Tetrachloroethene	25 ppm	NA	100 ppm	150 ppm
Thallium	5.0 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	NA	15 mg/m <sup>3</sup>
Toluene	50 ppm	100 ppm	150 ppm	500 ppm
Trichloroethene	25 ppm	NA	200 ppm	1,000 ppm
Vanadium	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>	NA	35 mg/m <sup>3</sup>
Xylenes	100 ppm	100 ppm	150 ppm	900 ppm
Zinc	5.0 mg/m <sup>3</sup>	5.0 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	500 mg/m <sup>3</sup>
1,1,1-trichloroethane	350 ppm	350 ppm	450 ppm	700 ppm

**TABLE 2**  
**RESPONSE LEVEL AND ACTION**

Instrument	Reading	Additional Monitoring	Action
PID (breathing zone)	>1 ppm above background sustained for 10 seconds	--	Stop work, move upwind, monitor perimeter, and notify SHSO and PM; continue work when levels decrease
	Every 1 ppm increase	--	Stop work, move upwind, monitor perimeter, and notify SHSO and PM; may continue in Level C or wait until levels decrease
	>5 ppm	--	Stop work, move upwind, monitor perimeter, and notify SHSO and PM; may continue in Level C
	>10 ppm	--	Stop work, move upwind, monitor perimeter, and notify SHSO and PM
Observation	Potential for splashing/dust	--	Upgrade to modified Level D
Thermometer	>75 °F	--	Institute heat stress program
Noise	>85 dBA	--	Requires ear plugs

## FIGURES

**APPENDIX A**  
**MEDICAL SURVEILLANCE AND TRAINING**

## **M&A Safe Work Practices Prevention of Heat Stress and Stroke**

Heat stress may manifest as a variety of health effects ranging in seriousness from temporary fatigue to death. Factors influencing heat stress include individual susceptibility, environmental conditions, personnel protective equipment, and the level of physical exertion. The Site Safety Officer will take precautionary measures against heat stress, and monitor workers for symptoms of heat stress or heat stroke, as necessary, depending on the ambient temperature and worker susceptibility.

### **Heat Stress Symptoms**

Symptoms of heat stress include the following:

- Heat rash
- Heat cramps caused by heavy sweating
- Pale, cool, moist skin
- Dizziness
- Nausea
- Fainting.

### **Heat Stroke**

In extreme cases, heat stroke causes the body temperature to rise to critical levels. Immediate action must be taken to cool the body to prevent serious injury or death. Symptoms of heat stroke include the following:

- Red, hot, dry skin
- Lack of perspiration
- Nausea
- Dizziness and confusion
- Strong rapid pulse
- Coma.

### **Reproductive Effects**

- If during the first trimester of pregnancy, a female worker's core temperature exceeds 102.2 °F for extended periods, there is an increased risk of malformation to the unborn fetus.
- Temporary infertility in both men and women may be associated with core temperatures exceeding 100.4 °F (ACGIH, 1996).

### **Worker Susceptibility**

Factors that may affect a person's susceptibility to heat stress include:

- Dehydration
- Acclimatization
- Physical condition
- Infection
- Sunburn
- Medications
- Chronic disease
- Age.

### Safe Work Practices

The following practices are recommended for moderate exertion work (e.g., sitting or standing with intermittent walking, etc.) in Level D ensemble at adjusted temperatures of not more than 80 °F.<sup>(1)</sup>

- Inform workers of heat stress symptoms.
- Encourage workers to drink 16 ounces of cool water or sport drink before commencing work.
- Encourage workers to drink water or sport drink at each work break.
- Visually monitor workers for symptoms of heat stress.

The recommended frequency for rest breaks and monitoring is presented in Table 1. When the ambient air temperature, adjusted for the added effects of direct sunlight (see Table 1), reaches 80 °F, or workers begin to exhibit signs of heat stress, the Site Safety Officer shall monitor pulse rates at the beginning of each break. For workers wearing semi-permeable or impermeable encapsulating suits, monitoring shall be performed when the adjusted temperature reaches 70 °F. If rates exceed 55 pulses per 30-second period, the duration of the next work cycle shall be shortened by 33 percent.

The following actions shall be taken in response to heat stress symptoms:

- Workers who exhibit symptoms of heat stress shall not be permitted return to work until symptoms have abated.
- If a worker exhibits symptoms of heat stroke, immediate action shall be taken to cool the body, and emergency medical care summoned
- Notify the Corporate Health and Safety Officer when persons exhibit signs of heat stress.

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<sup>(1)</sup> [Note: Heat stress may be of especial concern when working inside of a tank or other confined space where humidity may be high and temperatures may exceed ambient air temperatures. M&A employees are prohibited from entering a confined space or tank except under the conditions specified in M&A's Work Practices for confined space.]



**TABLE 1. Recommended Work Break Frequency and Monitoring to Prevent Heat Stress<sup>(2),(3)</sup>**

Adjusted Temperature Range	Level D	Impermeable Clothing
72.5°F-77.5°F	Every 150 minutes	Every 2 hours
77.5°F-82.5°F	Every 2 hours	Every 1.5 hours
82.5°F-87.5°F	Every 1.5 hours	Every 1 hour
87.5°F-90°F	Every 1 hour	Every 30 minutes
90°F and Above	Every 45 minutes	Every 15 minutes

**References:**

American Conference of Governmental Industrial Hygienists. *Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices*. Cincinnati. 1996.

National Institute for Occupational Safety & Health. *Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities*. Cincinnati. October 1985.

- <sup>(2)</sup> The adjusted temperature takes into account the effects of direct sunlight. The adjusted temperature may be calculated by measuring the temperature with a standard glass-mercury thermometer that is shielded from sunlight or other radiant heat sources and applying the following formula:

$$\text{Adjusted Temperature } ^\circ\text{F} = ^\circ\text{F} + (13 \times \% \text{ sunshine})$$

[Note: On a typical cloudless Southern California day, the % sunshine = 100%.]

- <sup>(3)</sup> This table presents the recommended frequency of rest and monitoring for physically fit and acclimatized workers, working at a low to medium low exertion level (e.g., 250 kilocalories/hr.)

## **MEREDITH & ASSOCIATES**

### **MEDICAL SURVEILLANCE AND TRAINING POLICIES**

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#### **MEDICAL SURVEILLANCE**

In accordance with Section 6.0 of M&A's Employee Handbook and Section 4.2 of its Injury and Illness Prevention Program, mandatory medical surveillance has been instituted for selected technical/professional staff, who routinely work at job sites at which they may come into contact with hazardous substances. The program was developed to comply with the requirements of the Part 1910.120 Federal OSHA Standards. The purpose of the program is to provide comprehensive medical examination and assessment of employees whose job functions may involve working with hazardous substances. Through medical surveillance, each individual is assessed from the standpoint of their ability to work in environments where chemical exposure, physical stresses such as heat and noise, and the use of respiratory protection may be involved.

Baseline (i.e., pre-field work), annual, exit (i.e., upon termination of employment), and if necessary, special/"emergency" medical examinations (if necessary) are required and are provided by M&A at no cost to the employee. The content of the examinations is determined by qualified occupational health specialists and physicians of the Centinela Hospital Airport Medical Clinic, located at 9601 South Sepulveda Boulevard, Los Angeles, California 90045. It includes the following categories: work history, medical history, CBC (i.e., WBC, RBC, hemoglobin, hematocrit, MCV, MCH, RDW, platelets, MPV, and WBC Diff), chemistry panel (including lead, HDL cholesterol, LDCL, and LDL/HDL ratio), urinalysis, spirometry, audiometry, chest X-ray, and direct examination (including blood pressure, pulse, and rectal). For employees over the age of 40, a resting electrocardiogram (EKG) is taken; for employees 50 years of age or older, a treadmill EKG is performed.

A "Respirator Wearer's Certificate Form" accompanies the copy of the examination reports and laboratory analytical results, which are forwarded in confidence to M&A's health and safety officer pursuant to a "General Authorization for Release of Information Form." The Form must be signed in advance by the employee and the attending physician. As a matter of policy, M&A has directed the occupational health specialists and physicians of the Centinela Hospital Airport Medical Clinic to update the scope of the policy, as appropriate, to reflect the specific hazardous substances to which M&A's employees have the greatest potential for adverse exposure.

#### **TRAINING**

All M&A field personnel and subcontractor field personnel have received 40-hour OSHA training per 29 CFR 1910.120 regulations. M&A project supervisors have received 8-hour management and supervisor training per Title 8 CCR section 5192(e)(4) regulations. Follow-up annual 8-hour refresher training also is required. This training covers topical areas related to health hazard recognition, safety training, respiratory protection training, equipment training, safe work practices, personal hygiene, etc. In addition to the OSHA hazardous waste site worker training, all M&A field personnel assigned have current certifications in adult first-aid and cardio-pulmonary resuscitation (CPR). All workers will have undergone respirator fit tests in the event that respirators may be required during field investigations. Additionally, drilling subcontractor employees also maintain certification in adult first-aid and CPR; they also undergo specialized training that covers operation of the drill rigs and safety procedures as part of their employment.

## **APPENDIX B**

### **FORMS**

## SAFETY MEETING FORM

Facility:	Job Number:
Date:	Time:
Site Location:	
Type of Work:	
Chemicals:	
<b>SAFETY TOPICS PRESENTED</b>	
Protective Clothing/Equipment:	
Chemical Hazards:	
Physical Hazards:	
Environmental Hazards:	
Health Effects:	
Emergency Procedures:	
Nearest Hospital/Clinic:	
Phone:	Paramedics Phone:
Special Equipment::	
Other:	
<b>ATTENDEES</b>	
Name Printed/Signature	Name Printed/Signature
Meeting Conducted by:	
Supervisor:	

### Acknowledgement Statement

I understand and agree to abide by the provisions of this health and safety plan, including the appendixes.

Name	Title	Date
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Name	Title	Date
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Name	Title	Date
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Name	Title	Date
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## HEALTH AND SAFETY COMPLIANCE AGREEMENT

Project Number: \_\_\_\_\_

**Site Location:** \_\_\_\_\_

Site Name: \_\_\_\_\_

Date of Plan: \_\_\_\_\_

Project Manager: \_\_\_\_\_  
Name

Signature

Date \_\_\_\_\_

**Project Health & Safety Officer:** \_\_\_\_\_  
Name

Signature

Date \_\_\_\_\_

Site Health & Safety Officer: \_\_\_\_\_  
Name

Signature \_\_\_\_\_

Date \_\_\_\_\_

I the undersigned have reviewed a copy of the health and safety plan prepared for the project identified above. I have read the plan, understand it, and agree to comply with all of the health and safety requirements contained in this plan. I understand that I may be prohibited from working on the project for violating any of the requirements.

**SIGNED**

NAME

**COMPANY**

DATE

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## SAFETY COMPLETION REPORT

(This report must be submitted to the Health and Safety Officer within five days after the completion of the project.)

Report Completed: \_\_\_\_\_  
Name Signature Date

Project Name: \_\_\_\_\_ Project Number: \_\_\_\_\_

### 1. Evaluation of Health and Safety Plan (Add additional pages if required.)

- a. Was the HSP Adequate? ☐ No ☐ Yes
- b. Did the HSP adequately anticipate chemical and physical hazards actually present at the Site? ☐ No ☐ Yes
- c. What situations were discovered that were not anticipated in the HSP?

d. How were these situations handled? \_\_\_\_\_

- e. Was the recommended personal protective equipment (PPE), such as gloves, respirators, eye, face and whole body skin protection appropriate to protect employees from chemical hazards? ☐ No ☐ Yes

f. If not, what should be improved in future HSPs of this type? \_\_\_\_\_

### 2. Exposure Data

- a. Were any employees exposed to chemical or physical hazards as a result of failure of PPE or other problems?  
☐ No ☐ Yes

If yes, give names of employees: \_\_\_\_\_

- b. Was monitoring performed? ☐ No ☐ Yes
- c. What type of monitoring was performed? ☐ Area Monitoring ☐ Personal (On Employee) Monitoring
- d. What type of monitoring equipment was used?

- |  |   |
|--|---|
| <input type="checkbox"/> Personal Air Sampling Pumps             | <input type="checkbox"/> Colormetric Indicators (Draeger) Tubes |
| <input type="checkbox"/> Vapor Badges                            | <input type="checkbox"/> Film Badges or TLD badges (radiation)  |
| <input type="checkbox"/> Charcoal Sorbent Tube (Analyzed by Lab) |   |
| <input type="checkbox"/> Direct Reading instruments including:   |   |
| <input type="checkbox"/> PID                                     | <input type="checkbox"/> FID                                    |
| <input type="checkbox"/> Photovac                                | <input type="checkbox"/> MiniRae                                |
| <input type="checkbox"/> Combustible Gas                         | <input type="checkbox"/> Oxygen Deficiency                      |
| <input type="checkbox"/> Hydrogen Sulfide                        | <input type="checkbox"/> Carbon Monoxide                        |
|  | <input type="checkbox"/> Hnu                                    |
|  | <input type="checkbox"/> OVM                                    |
|  | <input type="checkbox"/> Other                                  |

- e. Summary of Sampling Results (Attach additional pages if required.)

## STOP WORK ORDER

(This order must be submitted to the Project Health and Safety Officer within 24 hours after notice is issued.)

Order Issued by: \_\_\_\_\_  
Name Signature Date

Project Name: \_\_\_\_\_ Project Number: \_\_\_\_\_

1. Describe work in detail. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. What corrective actions were taken? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I have reviewed this Stop Work Order. I understand the importance of following proper Safety Procedures on the Job. I certify that the above corrective action(s) has been implemented.

Implemented by: \_\_\_\_\_  
Name Signature Date